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SPANISH COLONIAL MEDICINE[1]

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When I undertook to review, even briefly, the progress of medicine in the former Spanish colonies, I realized that there had been but little written upon the general subject, but until I began a search for material, I did not realize how small that little was. The average physician in this country knows practically nothing of medical practice in Latin America, or even in the Philippines, and this lack of knowledge of our Southern neighbors characterized no less our predecessors. Even in Spain herself, there has been less interest in the advancements made in Spanish colonies than the subject has deserved, though Spain's concern in the medical affairs of her overseas children was greater than that of the British for their colonials until a comparatively recent date.

The Spanish colonial period began, of course, in 1492 with the discovery of the New World by Columbus and ended only in 1898 when Cuba, Puerto Rico and the Philippines passed from Spanish dominion. Aside from these three and the few present extracontinental possessions, the last provinces of the once mighty empire were lost early in the 19th Century with the attainment of the independence of one

[1] Delivered before the Johns Hopkins Medical History Club, April 12, 1934.

country after another. A study of Spanish Colonial Medicine would, to be complete, have to include more than four centuries of advancement, but the work in the fifteenth to the eighteenth centuries is what is ordinarily considered, for by the nineteenth century the overseas possessions had already begun to assume their own character. But even to-day Spain's dominion over the hearts of the peoples who were once her colonials, is undiminished. This is everywhere recognized and was well expressed by Blasco Ibañez when he stated that Spain had no further need of colonies, since all these peoples have become her spiritual children.

This mighty hold of Spain on the affections of Spanish American peoples and other former colonials resulted in a notable similarity of thought in the several Republics, separated though they were by frequently changing political lines. Thus we may consider the medicine of a score of colonies, now independent states, as a more or less uniform whole.

It has been stated that the Spanish *conquistadores* failed to make the most of their contacts with the native civilizations of what is now Latin America, but the charge is unjust as the writings of the *cronistas* clearly show. Spanish colonial medicine was developed not only on the groundwork of the medical science of the mother country, but likewise on that of the new world.

ABORIGINAL MEDICINE IN LATIN AMERICA

Precolumbian, like all primitive medicine, was a mixture of superstition and religion with a few sound scientific observations. Despite the opportunity that their sanguinary religious practice of human sacrifice might have afforded, the practitioners of the healing art did not make any attempt to study anatomy, so that surgery never developed far. Beyond simple operations, such as circumcision, bloodletting, incision, and embryotomy, there was little operative procedure except trephining which, as far as we may judge, was of purely religious significance. However, *huacos*, or ancient pottery images found in Peru, show the faces of individuals suffering from the form of dermal leishmaniasis known as *uta*, in which treatment had consisted of ablation of the lips. Disease was attributed largely to supernatural influences, but there was also a belief that contributory

causes included the effects of cold, humidity, and other metereological factors. The abuse of food and drink, sexual excesses, and fatigue were likewise recognized as in some way connected with the causation of maladies. Physiological knowledge was restricted to the more obvious functions of the body. The principle of life was contained, they thought, in the blood, a belief reflected in their religious ceremonies and other customs. Physicians were wont to attempt to suck the venom from a snake-bite, and indeed the production of hyperaemia by this means was recommended in the treatment of several diseases.

Despite all this there had been built up therapeutic measures of remarkable efficiency in certain diseased states. They had an extensive pharmacopoeia from which many of our remedies of to-day have been drawn. Antidotes, emetics, purgatives, anthelmintics, diuretics, antipyretics were derived from their extensive medicinal botanical gardens. Prescott says that from the great botanical garden of Moctezuma, any herb desired by the physicians could be supplied. There were numerous remedies against bleeding, diarrhoea and intestinal and other parasites, and at least one plant for every disease. Hernández learned from the Mexicans the names of more than 3,000 plants used in therapeutic practice.

The patient about to undergo an operation, the soldier going into battle, and the victim destined for religious sacrifice, were given to drink of *touvetli*, which had the effect of lessening pain. More definite anaesthesia was produced by *yauhtli*. In Cuzco and the region of the Andes the resin of the *mulli* tree was used in the treatment of wounds, with remarkably satisfactory results.

The Spanish historians have much praise for these remedies, though it is difficult to gain a systematic conception from their isolated statements.[2]

Not merely the shortage of European doctors caused the *conquistadores* to employ native physicians in the care of their sick and wounded. Cortez himself was so impressed by the skill of the Aztec medical men who attended him after the battle of Otumba that he wrote to the

[2] The resistance of the natives of Nicaragua to certain bacterial infections was the subject of comment by American medical officers attached recently to the Guárdia Nacionál. Men receiving severe wounds often made surprisingly rapid recovery without complications.

King of Spain (1522) stating that there was no need for sending Spanish physicians to the new World.

Some writers have thought that not only did the natives know of the antimalarial properties of Peruvian bark, but that they even employed fever therapy in general paresis.

Never before or since has there been given to the world so vast a collection of remedies as those brought to light from America at the period following soon after its discovery. Besides quinine, there were added to man's weapons against disease: cannabis indica, cascara sagrada, chenopodium, coca, copal, chaparro, curare, damiana, condurango, guaiac, hualtata, ipecac, jaborandi, jalap, krameria, the so-called "Peruvian" balsam, sabadilla, sarsaparilla, Tolu balsam, and vervain—to mention only a few of them. It is strange, by contrast, to see how few mineral compounds were added, despite the riches of the New World sources, so many of which were used for other purposes by the natives.

There were some ideas that communicable diseases, including epidemics, formed a group. One of the accepted methods of getting rid of a disease was by passing it on to some enemy or stranger. The frightful ravages of smallpox when communicated to the Aztecs by the Spaniards may have been a sort of retribution for this practice. But as far as their own people were concerned, isolation, particularly against skin diseases, was practiced. Special diets were held to be efficient in certain diseases.

SPANISH MEDICINE

The position and advancement of Spanish medicine have been to a great extent determined, as have other things Spanish, by the Kingdom's geographical position. The country is, in effect, an island, surrounded on three sides by the sea and cut off from the rest of Europe by the Pyrenees. Even within the peninsula the several provinces have been isolated from each other by mountain barriers.

At the time of the acquisition of her great domain across the seas, Spain's medicine was essentially that of the followers of Hippocrates and Galen, taught through Arabian interpreters. Her achievements in medicine during the sixteenth, seventeenth and eighteenth centuries, compared favorably with those of other European countries, except

Italy in the sixteenth and England in the seventeenth. Prior to that time medical knowledge assimilated and transmitted by the Moslems had been more or less stereotyped.

The discovery of America came just after the struggle of more than two centuries for the achievement of national unity (1252–1479), with the same principles at stake, *i.e.* that of unification, as represented by the King, and decentralization, as represented by the nobles and the cities. With the accession of Ferdinand and Isabella the legislative body (*Cortes*) gained more power. The universities rose at this time to great importance. The University of Salamanca, founded in 1215 had had many imitators so that by now there were seven in Spain.

In 1422 Juan II created a Tribunal of Alcaldes and Examiners to pass on the competence of applicants for the right to practice medicine. The privilege of serving as examining physicians and surgeons to the King and the nobles was in the hands of the *Protomedicato*, dating from this same year, and though there was protest at the Cortes at Zamora in 1432 and at Madrigal in 1438 against the great privileges of physicians, they were nevertheless confirmed by Royal ordinances, which forbade civil or other authority interfering with the work of the Protomedicate Tribunal. Indeed the special tribunals of justice of the physicians, beginning with 1422, antedate the Royal Councils and Chancelleries of Valladolid, Madrid and Granada, the Council for the Indies, and even the Tribunal of the Inquisition itself.

Bishop Mansona had founded a hospital at Mérida in 580 which antedated by more than two centuries the first in England (St. Albans in 794). The first field hospitals had been organized by Queen Isabella as national entities during the wars leading to the expulsion of the Moors, but the four great military Orders had maintained them as early as the twelfth century. No less than four hundred ambulances, consisting of wagons provided with beds were used after the capture of Málaga in 1487. Insane asylums at Zaragosa (1425), Seville (1436) and Toledo (1473) all existed before the discovery of America and, moreover, led the way in humane care of these patients. Leper houses existed in great number and were supervised by special officials (*alcaldes de lepra*).

The first chair of anatomy had been established by Ferdinand III

at the University of Palencia in 1240, being later transferred to Salamanca. Dissections were done outside the cities' limits, usually in the cemeteries. Lérida was one of the first universities in Europe to sanction public autopsies. The barber surgeons practiced surgery. The Salamanca students practiced bandaging upon an articulated manikin until 1490 when a school for technical instruction in surgery was established by *Antonio Amiguet* and *Juan Vals*.

The *Siglo de Oro* or Golden Age (1516–1565) was ushered in by the discovery of America, following soon upon the unification of Castile, Aragon and León under Ferdinand and Isabella and the conquest of Granada. Now Spain achieved her greatest military prowess in Alva's victorious compaigns in Europe and the conquest of Mexico and Peru. Velazquez and Cervantes and other Titans of that ilk flourished. Vesalius himself was attached to the Spanish court from 1543 until his death in 1564.

In 1526 Don Gonzalo began the special study of tropical medicine with his notes on *bubas* (yaws), and his statements together with those of *Diaz de la Isla* in 1542 started the controversy as to the American origin of syphilis. The first treatise on genito-urinary surgery was published by Diaz in Madrid in 1588.

MEDICAL EDUCATION

Soon after the conquest schools were established by the several religious orders. The first university in the New World was founded at Lima in 1551, the University of Mexico following soon afterwards, in 1553. The Jesuit College of the Philippines opened in 1595. The University of San Carlos in Guatemala was inaugurated by the Dominicans in 1681. Though medicine had been taught since 1538 at the University of Santo Tomás in Santo Domingo, and at the Indian schools in Mexico organized by Bishop Zumárraga some attention had been paid to things medical, the first medical chair was established at the University of Mexico in 1580, at Lima in 1638 and Santa Rosa, Havana, Bogotá and in Chile early in the following century.

The teaching at first followed the lines of the old European universities with all the necessary paraphernalia. There were a few books on prognosis, the course of epidemics, the works of Galen and Avicenna and Guido's surgery. The medical discoveries made in Europe during

the Colonial period were but little known. The Royal decree required medical education to cover a four-year period with two years in practice under the direction of a physician, before a license could be granted. Surgeons could obtain license after four years "practical" experience in a hospital. Unfortunately, the thoroughness of the education was not in keeping with this theoretical standard.

The first necropsies in America were performed in Mexico (1576). The first chair of anatomy, likewise in Mexico, dates from 1621, though one swallow does not make a summer and the teaching was quite deficient until much later. The Spanish Government was reluctant to authorize the study of anatomy even in Spain itself. In Chile, notwithstanding numerous requests for such permission, there was no chair of Anatomy established until 1773 and in Buenos Aires not until 1801.

In 1753 *José Dumont*, a Frenchman, attempted some new methods of teaching and study and instituted a private course in anatomy, and there were several other "unofficial" medical courses started. But they were soon suppressed by the authorities at the request of the University of Mexico. It was only in 1833 that anatomical dissection was recognized as a part of the regular instruction of medical students.

The Franciscan fathers in Mexico and the Jesuits in South America provided medical and nursing care for the Indians. The Dominicans organized the first medical schools, such as in Mexico (1580), Quito, Santo Domingo, and other places. The Jesuits are also entitled to further credit, for they studied medicinal plants and classified anatomical knowledge. Of special note was *Montenegro* (1663–1728) whose collected teachings served for several generations as a textbook on materia medica.

CAESAREAN SECTION

The first Caesarean section performed in the New World was carried out by two friars at Santa Clara in Mexico in 1779. Another is recorded in 1795. The execution of Caesarean section, even by laymen, was urged as a religious duty by the Viceroy of Mexico in 1772, following earlier clerical injunctions. The first Caesarean section on a living patient was not done until 1820, being performed by Ruiz

Moreno in Venezuela. This was seven years before the first of such operations in what is now the United States, namely in Santa Clara, California. Many of the books of the colonial period include discussions of the need for such operations as a religious duty.

LICENSING OF PHYSICIANS

In spite of the increasing number of universities in Spain, at the beginning of the colonial era, there were not enough physicians available to supply the new colonies. The Spanish sovereigns had ordered the *conquistadores* to carry physicians with them, but even the comparatively high pay did not induce them to go in great numbers across the still unknown seas. Only those with the true spirit of adventure at heart would consent to cast their lot in the perilous undertaking.

Columbus was accompanied on his first voyage by one *Master Alonso* the physician and *Master Juan* the surgeon. On his second voyage in 1493 Columbus took with him *Diego Alvarez Chanca* of Seville, physician to the court. This physician was able to detect the simulation of the cacique Guacamari who claimed to have been wounded. In a letter written back to Seville in 1494 he mentions a few American plants, the first reported in Europe. He was the first European to give any study to the diseases of the Indians, and possibly deserves priority in the account of scurvy.

The names of the physicians who accompanied Columbus on his later journeys, those who were with Cortez in 1542, with Magellan in 1519, with Cabot in Uruguay, and with Mendoza in Peru, are known, and the amount of their pay is recorded. Each physician received 50,000 maravedis and each pharmacist 25,000—whatever that may mean in the terms of moneys that we understand.

But still the number of physicians who elected to stay in the colonies remained inadequate. In 1566 there were five physicians in Santiago de Chile and more than 200 years later, in 1781, the number was still five—though possibly not the same five.

The greater part of the practitioners of the healing art were the members of the various religious orders, particularly the Jesuits. Their motto: *Curate infirmos et prædicate*, tells the story. They gathered the Indian converts into groups or communities and in-

structed selected pupils in the preparation of medicaments, diagnosis of maladies, etc., and thus formed a corps of nursing aids who, from their badge of office, the stock with the crucifix at its end, were known as *curuzuyaras*. These men would make daily visits to the sick, administer remedies thought necessary, and attend to the cooking of special diets. The names of some of these individuals have been preserved.

With the suppression of the Jesuits in 1767 this organization fell to pieces. Nor were there any replacements for the Jesuit lay brothers who had often been licensed physicians. Their successors were able to do but little in the way of practice worthy of the name, though they did promote Caesarean section in women dying in labor.

The missionary physicians were exempt from the colonial medical practice laws, and in Mexico were able to have the Viceroy decree a fine of 500 pesos to any person opposing medical practice by the padres. For all other physicians, surgeons, and apothecaries, a license after due examination was required. In 1563 a Royal decree gave the Alcaldes the task of examining physicians, the duty somewhat later being transferred to the *Protomedicato*, which had been gradually established in all parts of the colonies. Regions without their own *protomedicato* were under the chief group at Madrid.

The first *protomedicato* in the New World was instituted in Mexico in 1570 and those in other provinces followed. Physicians, surgeons, apothecaries and barbers all received licenses from this source and all were forbidden to allow their professional duties to overlap. Surgeons did not have the same rights as physicians until after the Independence.

The practicing of medicine illegally was considered a sin, and in the *Confessario* of 1599 one of the questions to be asked by the confessor, was whether or not the penitent, if a physician, had exercised that art without due previous examination. The Inquisition, established in Peru in 1570 and in Mexico in 1597, took cognizance of the derelictions of medical men and the records give the names of a number who suffered punishment. Illegal practice was likewise a civil offense. At times the native physicians seem to have been able to hold their own before the courts when accused of practicing medicine without due authority. On one occasion an Indian physician was being tried for this offense and drew from his pocket an herb which he asked the

judges to smell. This they did and all had severe epistaxis, which the Spanish physicians were unable to stop. The Indian declined to help until assured that he would not be punished, and on being so promised, produced another herb which acted like magic. Knowledge of such plants is, alas, lost. Think of how valuable they would be in modern court procedure!

The universities and protomedicatos were not centers of research, but merely of instruction. Scientific societies were at first forbidden to organize research. In 1732 *José Mercado* proposed a union of Mexican physicians and founded an *Académia de Medicina*, but it was short-lived, for the Spanish monarch did not look on it with favor.

EPIDEMIC DISEASES

The early accounts tell of the terrible ravages of certain epidemic diseases, particularly those brought in by the Europeans. Smallpox, typhus fever, malaria and yellow fever were the chief scourges.

Smallpox was imported from Spain very early. The first cases noted among the Indians were reported in Hispaniola in 1518, and from there it spread to other islands. Attempts at quarantine were made, and it was ordered that ships with cases of smallpox on board be forbidden to enter the harbors. It is not known just when the disease reached the mainland. Depopulating epidemics raged in Mexico in 1545–1576, in 1535 in Peru, in 1589 in Paraguay, and in 1554 in Chile. The mortality was very high, particularly amongst the Indians. Smallpox was the greatest evil of Spanish colonial life. That the disease occurred in cycles and began among the Europeans and ended among the Indians was the subject of comment. After Jenner's discovery, the Spanish Government in 1805 sent physicians, on the *Maria Pinta* to the colonies, headed by *Balmis* bringing a number of children as living carriers of the vaccine.

Under the term *tabardillo* or *chavalongo*, epidemics of typhus or typhoid fever were described. The first was observed in 1526 during the sojourn of Cabot in Santa Catalina. Of course the two diseases were not differentiated. Bravo, who first described *tabardillo*, attributed it to unhealthy vapors from the lakes, and asserted that the disease had been known in Europe since 1489. That the Mexican

Indians had a term for *tabardillo* has been taken as evidence that the malady was not imported from Europe.

The origin of malaria is uncertain. It has been said that it was brought in by negro slaves, and that the American continent, giving good for evil, presented the world with quinine in return.

Yellow fever is also thought to have come to the New World via infected negroes. The natural immunity of the negro may point to this. A terrible epidemic occurred in Santo Domingo in 1595. It was brought into Cuba, according to Finlay, in 1649, and thereafter Cuba remained the focus of the disease until the work of Reed and others. The first American description of the disease was by *Tomás Romay* who published *Disertación sobre el vómito negro*, in 1797. John Holliday had previously written a pamphlet on the subject (1794) while in Cuba, but it was not allowed to be published, by the Spanish authorities. It was, however, authorized by the medical faculty of London in 1795.

HOSPITALS

Before the Spaniards came, hospitals (*cocoxcacalli*) and orphanages had already been built by the natives. Moctezuma had one in his palace for rare and incurable diseases. There was a hospital at Santo Domingo about 1503 or earlier, but the first Spanish hospital worthy of the name was established in the gardens of Huaxtepec under the direction of *Gregorio Lopez* several years later. Cortez himself founded a hospital for lepers at Tlaxpana but it was ordered closed because of fear of the disease as the lepers used the city water supply. The *Hospitál del Marquéz* was located on the spot where Cortez first met Moctezuma in 1519. Hospitals were established in many of the other Spanish-American colonies in the early sixteenth century.

MEDICAL PUBLICATIONS

With the coming to the New World of the first official *cronista*, *Oviedo* in 1514, and who crossed the ocean no less than ten times, there began the systematic description of medicinal plants of America. He devoted four books of his *História Generál y Naturál de las Índias*, first printed in Toledo in 1526, to the real or supposed healing qualities of these plants. Another early writer on the subject, though he

had never himself been to America, was *Lopez de Gómara*, who as the chaplain of Cortez and his children received first-hand information from the great *conquistador* himself. His *História Generál de las Índias* was printed first in Zaragoza in 1552 and went through several editions. *Juan Fragoso* of Toledo, physician to Philip II also wrote a book on the subject, *Discursos de las Cosas Aromáticas, etc.*, Madrid, 1572.

In 1565 *Nicolas Monardes* of Seville published an account of West Indian materia medica and, though he never visited the New World, established the first garden in Europe devoted to the culture of medicinal plants from America. His two works on the subject (*De las Drogas de las Índias*, 1565) and (*História Medicinal de las Cosas que se traen de Nuestras Índias Occidentales*, 1574) became classics and were in use for several centuries, being translated into several languages.

What may be termed the first scientific expedition to America was that of *Hernández*, the physician of *Philip II*, who spent seven years in Mexico (1571–1577) and produced a mighty work of seventeen volumes, which remained unpublished for two centuries, being known only through second-hand versions. The manuscripts and their valuable illustrations were finally lost in the fire at the Escorial. They are known chiefly from *Francisco Ximenez's* translation of a part into Spanish, and the abridged edition by *Recchi*.

The first book printed in Spain appeared in Barcelona in 1474. The first books or pamphlets in the New World were published in Mexico in 1536, in Lima in 1584, and in Manila in 1593. These were more or less of a religious character. The first medical book in the New World was printed in Mexico in 1570. This was *Opera Medicinalia* published by *Francisco Bravo*. Only three copies of this rare work are known, one being in the New York Public Library. The author, who had formerly practiced in Seville, dealt with his subject according to the doctrines of Galen and others. One of the illustrations is a sketch of the branches of the *vena azygos*. Eight years later followed Alphonso López's *Summa y Recopilación de Cirujia*. One of the early medical graduates of the University of Mexico was *Fray Augustin Farfan* who was the first Mexican to write a medical work, *Tractado Breue de Cirujia*, in 1592. However, *Benavides' Secretos de Chirurgia* was written in Mexico, though published in Spain

(1567). *Alonzo Lopez de Hinojosos*, a native surgeon (1535–1597), participated with Hernandez in his work and in 1578 published his surgery, *Summa y Recopilación de Ciruiia*, in which he considered anatomy, fevers, tumors, wounds, fractures, etc.

Capitan *Bernadino Vargas Machuca*, who spent nearly his whole life in the military service and made many campaigns in Mexico, Peru, and Chile, devoted a chapter of his *Milicia y Descripción de las Índias*, Madrid, 1599, to the subject.

Herrera in 1601, *Martinez* in 1609, *Diaz del Castillo* in 1632, all contributed to the study of Mexican natural history. There is some medical and more general interest attached to the work of *Garcilaso de la Vega* regarding early conditions in Peru, for he was the son of one of the conquistadores by his wife, a granddaughter of the great Inca *Tupac*.

The Jesuit *José Acosta* did for Peru what Hernandez had done for Mexico, and published the *História Natural y Moral de las Índias* which appeared in 1589 and was one of the best sellers of the sixteenth century book market. Humboldt calls him the Pliny of the New World.

The first medical periodical was likewise issued in Mexico. It was the *Mercúrio volante* in 1772, edited by *José Ignacio Bartolache*, Professor of the University. A little later, in 1784 the *Gaceta de literatura de Méjico*, appeared. In Peru, the *Mercúrio peruano* (1791) contained a few articles of medical interest.

León lists 315 medical works in Mexico dating from 1570 to 1833.

The first attempt at what we would now call a sanitary survey, was made in 1577 by command of Philip II. Among other data sought were information on the increase or decrease of the Indian population and the causes for such changes. In 1599 *Marquéz de Salinas*, Viceroy of Peru, had a census of Lima made and in 1612 the same was done for the Indians of the region of the Rio de la Plata by *Herrera*. Censuses of Quito were taken in 1645 and 1757. The first hospital statistics published in America were those to be found in the *Gaceta de México* of 1785.

The greatest discovery of all was, of course, that of the anti-malarial properties of cinchona. The Indians of Quito had had some knowledge of the curative properties of the *querango* bark, for about 1630

they offered to treat the prostrating malarial fever of the Corregidor of the province of Loxa. In 1662 the Jesuit Cobo took some of the bark back to Spain and Rome. The wide-spread use of the new drug dates, however, from its use at Cañizares's suggestion to cure the chills and fever of the wife of the Viceroy of Peru, Count de *Chincon*, and for her the drug was named by Linnæus. A queer theological controversy followed the introduction of this product. Since it was propagated in Rome and advocated by the Catholics, it was for a time opposed by some of the Protestant clergy.

Of particular interest to North Americans is *Alvarez Nuñez Cabeza de Vaca*, one of the *conquistadores* who came to the New World with the expedition of Panfilo de Narvaes. He was the first white man to cross the vast territory along the Gulf of Mexico from Florida to Texas. He sailed from Spain in 1527 and reaching the Florida coast, pushed on to the Mississippi River in 1530. During his captivity among the Indians he studied their medical customs and rites. On one occasion he records that he himself performed a surgical operation on an Indian, removing an arrow-head and closing the wound with sutures.

The seventeenth century achievements of worth were not many. Medical teaching continued didactic and the publications brought to light nothing of great value.

In 1607 *Juan de Bârrios* published some general rules for the prevention of epidemics. Certain fruits were forbidden, streets were ordered cleaned, stagnant water was ordered drained, and a sewage system was recommended. Other regulations pertained to the closing of theaters and other crowded public places, isolation of the sick and separate facilities for washing their clothing when patients in hospitals, etc. He also wrote on chocolate.

Diego de Cisneros described the sporadic and epidemic diseases of Mexico City in his *Sitio, Naturaleza y Propiedades de la Ciudâd de México* in 1618.

Some of the religious discussions are interesting in passing. It was questioned whether the drinking of chocolate before celebrating mass was to be denied the priests, and whether tobacco might be smoked before communion. In other words, were these to be considered as foods?

Was tobacco a toxic herb? Much was written pro and con. Similarly the Viceroy asked for learned opinions as to whether the Mexican alcoholic beverage *pulque* should be prohibited as harmful. It seems to have been as hard to make medical men agree, and give a definite opinion that all would accept, then as during the recent unpleasantness of the Eighteenth Amendment.

Further accounts of the plants of the New World followed, several authors giving descriptions of them. Obviously the people at home thought of medicinal herbs and the like as the only medical interest in America. It was the sort of opinion people in England had of the tobacco from the Virginia plantations—the colonists existed for nothing else. The more important of these writers were *Francisco Ximenez*, a Dominican lay brother who came to Mexico in 1604 and whose work is chiefly derived from that of Hernandez; and *Juan Antonio Fuentes de Guzman*, who in 1690 wrote of medical conditions in Guatemala, with chapters on the therapeutic qualities of medicinal plants.

Francisco Colin, who died in Manila in 1660, accomplished for the Philippines what Hernandez and Acosta had done for Spanish America. His *Labor Evangelica*, published in Manila three years after his death, is the first work containing data of value on the flora, fauna, etc., of the Islands. The first purely medical book published in the Philippines was *Remedios Faciles para Diferentes Enfermedades* by Pablo Clain (Manila, 1712).

FRENCH INFLUENCE

The discovery of quinine drew many a scientific man to America to study it at close range and to seek other treasures. *La Condamine*, who came in 1735, gave to the French Academy the first scientific description of the tree which the botanist Jussieu had first described in 1739. French influence, now so strong in Latin America, was felt at this early date and some of the noted scientists of the Spanish colonial period were French.

In the eighteenth century there are three outstanding names. *Espejo*, an Ecuadorean of Indian descent, was his country's leading patriot and the first journalist and librarian. His best medical effort was an essay on smallpox inoculation, which he opposed, though

favoring isolation. *Unánue*, the centenary of whose death was recently celebrated, is one of the fathers of Latin-American medicine. To him goes the credit for the creation in 1792 of the anatomical amphitheatre in Lima for the practical teaching of medicine, and the opening of the San Fernando medical school. His *Observaciones sobre el Clima de Lima* (1806) was a pioneer work in a field not ordinarily considered medical. Like many another Latin-American physician, he was also a statesman and became President of Peru. *Vargas* reorganized the medical schools of Venezuela and was his country's leading surgeon. He, too, was a versatile man, being skilled in mathematics, theology, languages, and philosophy. He was President of Venezuela.

With the independence of the former Spanish colonies there was reorganization of medical education. In 1831 the *protomedicato* was abolished and a *Facultád Médica de México* created. Doors were opened to European science. France became the real center of medical education for those who could manage to undertake it. North American influence was hardly felt. In the end it was public health and sanitation and not the system of medical education which the Spanish American countries accepted from the United States. This of course came at the very end of the Spanish colonial period, since Cuba remained a colony until the dawn of the twentieth century.

PHYSICIANS IN PUBLIC LIFE, ESPECIALLY IN LATIN AMERICA

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Towards the end of the last century, Demolins, a French educator, wrote a book with an arresting title which enjoyed a certain international vogue. The title read, "In What Consists the Superiority of the Anglo-Saxons?" The subject seemed very timely in those days, in view of the outcome of the Spanish-American War. In short, the writer's thesis was to the effect that Latin countries suffered from too many lawyers among their ruling classes. It might be added that the first edition of this book was hardly out of the presses when an Italian professor got busy on a work entitled "In What Consists the Superiority of the Latins?"

How badly Demolins had missed the mark may be gathered from the fact that not so many years ago the *Journal of the American Medical Association* copied a short statement from a law publication showing the overwhelming predominance of gentlemen of the bar in every governmental branch of the United States. No comment was made, as the figures given were sufficiently eloquent by themselves.

The data herewith presented may also help to take off from legal shoulders at least part of the blame for conditions in Latin countries. Lawyers have naturally always had in Latin America, as elsewhere, a very important part in government. But there is a curious twist to the situation there. Physicians have from the very dawn of independence filled a hardly less influential rôle, a rôle, let us add, without its counterpart anywhere else.

In looking through the pages of history—limiting ourselves, if preferred, to medical works, and taking our choice between Dr. Garrison's and Dr. Sigerist's learned volumes—it may be a source of surprise to find out how few, indeed, have been the physicians ever reaching the heights of statesmanship. Moses and, after him, Mo-

hammed, did much along hygienic and dietetic lines and more on racial awakening, but neither was a physician. On the other hand, as the names of Rumford, Franklin, Chaptal and Berthelot and, on a lesser plane, those of Humboldt and Goethe, testify, some physicists and naturalists have been real statesmen in name as well as in fact. Bacon could be enrolled perhaps here, but, as Harvey complained, "The Lord Chancellor wrote of science as a Lord Chancellor."

To Homer, Aesculapius the Godlike was a Thessalian chief, whose sons Machaon and Podalirius, both excellent practitioners, led sections of the fleet against Troy, while Achilles, the hero, was taught, as Aesculapius himself, the healing art by Chiron, wisest of the cleftfooted Centaurs.

In American history we find Dr. John Pot elected deputy governor of the colony of Virginia in 1628 and Dr. John Winthrop as the first governor of Connecticut. In more recent times Rush's interest in politics earned him the distinction of being a signer of the Declaration of Independence and the more dubious one of being one of the leaders in the Conway Cabal against Washington. His sense of public duty—self-advertising, some called it—included active efforts for the suppression of slavery and the death penalty, and against alcoholism. Prominent among Washington's followers was Rush's pupil, Dr. James McHenry, who, after representing Maryland in the 1787 Constitutional Convention, rose to be Secretary of War. Many years had to elapse before any physician filled a similar position. Dr. Hubert Work, a former president of the American Medical Association, became Secretary of the Interior in Coolidge's Administration, and in President Hoover's cabinet, another former president of the same organization, Dr. Ray Lyman Wilbur, occupied the same post. Before them, another member of the medical profession had also nearly achieved the top in political life. Major General Leonard H. Wood, whose term of office as Military Governor of Cuba had been made memorable by the campaign against yellow fever, proved nearly successful in his race for the Republican nomination for the Presidency in 1920. He knew how to turn failure into accomplishment and his useful life closed, serving his country and humanity, with an altruistic enterprise against leprosy in the Philippines.

In Europe medicine has, as a rule, fared no better in politics. Pet-

rus Hispanus, the Portuguese who became the head of the Church under the name of John XXI, more properly John XX, stands out as the only one of his hierarchy to be mistaken for a magician. A physician—the single one in his profession ever to become a Pope—and also a philosopher, he wrote both the most popular formulary and tract on logic of the XIII century as well as the interesting *Liber de oculo*. His untimely death, through the fall of a roof, after a very short but most active pontificate prevented him from showing whether the monks were right in fearing his liberal views. Sir Thomas Browne's commentator, Digby, might lay some claim to the title which Henry IV bestowed on James I, of "the wisest fool in Christendom." Sir Kenelm, as a side issue to politics and even privateering, delved into natural history, and, to his pockets' gain, into medicine. Darwin's friend, Huxley, remained all his life a standard-bearer of human freedom on the platform and in the public prints. Coming into our times, a Canadian born physician, Sir Auckland Campbell Geddes, had a place in the British war cabinet and was ambassador to the United States. In Germany the gifted Virchow served for many years in both the Prussian and the German lower houses of Parliament. In his constant defense of popular rights, the fiery scientist did not hesitate to cross swords with the Iron Chancellor himself. To an interest in politics and the exile following the failure of the 1848 revolution in Germany, America owed her patriarch of pediatrics, the beloved Dr. Abraham Jacobi. In Roumania, only recently, the Prime Minister was a physician, Dr. Angelescu, and, in Norway, Dr. Nansen was for years a pillar of the radical forces, as well as abroad one of the strongest supporters of the League of Nations. In Portugal, one of the first presidents of the Republic was a physician, Almeida, who addressed in that capacity the Rio Academy of Medicine on the centennial of Brazilian independence in 1922. The case of Rodrigues Bettencourt is especially interesting as, before excelling as a statesman in Portugal, he spent twenty years of his life in Sao Paulo, where he was instrumental in the creation of the Pasteur Institute, the polyclinic, and the local medical society.

Spain has also a long list of men who found a way to combine the disciplines of medicine with the amenities of politics. Such, for instance, among those of cabinet rank, are: Mata, an authority on

legal medicine and champion of atheism, whose stormy career included a couple of periods in exile, terms as governor of Madrid and Barcelona, dean of the Madrid medical school and rector of the Madrid University; Esquerdo, a leader in the scientific treatment of the insane, Conde de Gimeno, the present president of the Madrid Academy of Medicine, Francos Rodriguez, who deserted medicine for journalism and Parliament, Cortezo, the former editor of *El Siglo Medico*, the only physician who ever received the Golden Fleece, and died but a short time ago, loaded with honors and years; and, finally, the prolific Marañón, who turned down an ambassadorship at the hands of the newly-born republic to continue his work at home, which he considered of more value to the country. This list could be enormously lengthened to embrace the scores of deputies who represented the medical profession in the first republican *cortes*. Probably this would be the best place to refer to the fact that, while physicians in any American Congress have never exceeded half a dozen, a larger number may be found in the Parliament of such small Latin countries as Uruguay. As experience has shown, these groups seldom act as units, even where the interests of the medical profession are involved. Almost invariably they stick to the party they represent, and once in parliament, politics comes first.

Of all European countries, France, however, has blazed the most brilliant trail. When Théophraste Renaudot, one of the fathers of modern journalism, showed a tendency to veer from that calling into his profession, the *Roi Soleil*, prompted by the Paris faculty, had him thrown into jail. We can, however, hardly class as politicians or statesmen such public servants as Renaudot and his contemporary Blegny, whose life so closely parallels his. Among Mirabeau's closest friends and advisers the polished Cabanis stands out. His taste for public life did not die with his patient, and to him was assigned the task of justifying in a proclamation Napoleon's *coup d'état* on the 18th of Brumaire. Although made a senator, Cabanis withdrew soon after to private life, as the imperial star could not bear secondary luminaries in its proximity. Condorcet had received from his hands the poison which eventually saved him from the guillotine, and to him Napoleon turned with a similar request, to have the drug, however, fail him in 1814. A charge from his enemies that he had

poisoned Mirabeau was met by a description of the sickness and death of the great French orator, which is probably his best work.

A contemporary of Cabanis, whose very name would make him shudder, was Marat, an Edinburgh doctor if not graduate, having in common with Napoleon and Mirabeau an Italian ancestry. Once rated as the best friend of the people, then denounced as a monster and killed as such by the sweetest of murderers, modern criticism has reconstructed his figure into the more natural lines of a lover of humanity, led to excesses by bitter memories, a passionate devotion to the lowly and the tragic times in which he lived. Another physician, whose dabbling into politics appears recorded in history, is Guillotin. His name is remembered not by his advocacy of vaccination or health work, but by the apparatus invariably connected with the Revolution and now, strange to say, with printing establishments. It may be well to mention here that, contrary to popular belief, this killing device was actually invented by Dr. Alphonse Louis, who named it after Guillotin because of the latter's championship of more humane methods for decapitation of criminals.

Another child of those stirring times was Doppet, Mesmer's bitter enemy both in clever if not witty verse and prose. While his advice on child-rearing derives from Rousseau and his essay on whipping and its effect on love from Meibom, he is more pleasant and original in his discussion of love-exciting plants and perfumes. Cast by a turn of the revolutionary wheel into the rôle of a general and charged with the difficult task of taking Toulon, it was his ill luck to have under him a young Corsican named Buonaparte who, watching his performance during a retreat, promptly set him down as a poltroon. None would have applied the term to his colleague Levasseur, the obstetrician who, after voting for Louis XVI's death, shamed generals and armies into winning battles, and exiled by the Bourbons on their restoration, was appointed professor of surgery at Louvaine. No such fortitude was shown by Berthollet who, starting as a physician, soon turned to chemistry. One of Napoleon's senators and pets—*mon chimiste*—he turned against him in 1814. On the return from Elba, he begged through his more loyal friend Monge for a smile from the Emperor, as otherwise he threatened to kill himself. Another chemist, the father of disinfection and also of army aviation, Guyton de Morveau, pre-

sided over both the national assembly and the dreaded committee of public safety. Indifferent to the King's lot, he tried hard to save suspected scientists and worked tirelessly in organizing arms factories and improving gunpowder manufacture. His efficient collaborator in this patriotic work was the most illustrious perhaps of the victims of the guillotine, Lavoisier, the founder of modern chemistry. The French Revolution has been reproached with indifference to science. It is not so, however. Lavoisier was killed—stupidly enough—not for being a savant but as one of the hated royal tax collectors. It was her regard for science, her foresight in engaging the services of men as Lavoisier, Morveau, Berthollet, Fourcroy, Monge, that enabled the Revolution to resist the armies of Europe, and taught her, for instance, when saltpeter lacked, to look in the cellars for the ingredients of explosives.

The encyclopedist Littré also played a secondary rôle in politics and even had a seat in the French senate, as Monge and Berthollet before and Pasteur and Claude Bernard afterwards. They, however, were appointed as representatives of science, not as a reward to partisanship. Raspail, the promoter of camphor as a panacea, while not strictly a physician—he was prosecuted once for practicing illegally—deserves a niche in this gallery. Among the first to use in modern times a microscope, anticipating Pasteur in attributing many diseases to parasites, he held his own with the great Orfila, warning the latter in the celebrated Lafarge case that he could find arsenic even in the judge's chair. A leader in the two revolutions of 1830 and 1848 and a champion of the seemingly hopeless cause of democracy during the Second Empire, a monument and a boulevard in Paris keep his memory green. We must place in a separate group Paul Bert (1830–1886), Gambetta's fierce lieutenant, who, having been chosen by Bernard to succeed him at the Sorbonne, after his epochmaking studies of barometric pressure, turned his energies from the quiet byways of science into the raging battle against clericalism. It may not be amiss to name after him another combatant, last of a line of physicians, the Father of Victory, the cultured, irreconcilable, clearsighted, dauntless Clemenceau. His name closes very properly with all éclat the list of old World physicians who swam and endured the muddy waters of political life.

In Latin America we meet even to a greater degree the peers of these men, as a cursory glance will soon reveal. Many examples may be quoted of the interest of physicians in politics and the recognition of their achievements in this field. At the recent Pan-American Conference at Montevideo, which might be called the Parliament of American Republics, a physician, Dr. Mañé, the Secretary of State of Uruguay, presided, and among the prominent delegates might be found such well-known physicians as Cafferata of Argentine, Chagas of Brazil, Arroyo of Guatemala, Paz Baraona of Honduras, Puig Casauranc of Mexico and Morquio of Uruguay. One of these men, the Mexican Secretary of State, assumed and held to the very end the leadership in practical suggestions. The diplomatic corps offers another good illustration. In recent times we come across the following physicians as representatives of their countries in the United States: Cesar Chamorro, Sacasa and the brothers De Bayle, of Nicaragua; Ulloa of Costa Rica; Argueta and Paz Baraona from Honduras; Puig Casauranc from Mexico; Leiva from Guatemala. Similar positions are or have been filled in other countries by Flores, Ozorio and Muñoz, of Bolivia; Argáez, Arias Argáez, Cajiao, Córdoba, Corpas, Cote, Cuervo Márquez, Delgado and Gutiérrez Lee (who practiced for over 50 years his profession in Cuba, where he represented his country until his death in 1928), of Colombia; Baralt, Barnet, Arostegui and Dominguez of Cuba; Carvallo Elizalde and Lobo Onell of Chile; Toledo Herrarte, Mencos, Arroyo and Padilla of Guatemala; Audain of Haiti, Barreiro and Castillo Najera of Mexico; Gubetich and Velazquez of Paraguay; Mimbela of Peru; Betances and del Valle of Puerto Rico; Blanco, Chacin Itriago and Carbonell of Venezuela, to take a few names from a rather long list. (The first envoy ever appointed by Mexico was not a physician but a naturalist, Ortiz Letona. On his way to the United States he was captured by the Spaniards and rather than stand for trial, took poison.)

Page after page might be filled with the names of Latin American physicians gathering new laurels in the field of politics. Portela, a president of the National Board of Health of Argentina, was Minister of Government and enjoyed with many another prominent physician the honor of being persecuted and exiled by the tyrant Rosas. Astigueta, one of the first professors of physiology, was attorney general.

While serving in the Argentine parliament, Cantón, the historian, and Penna, the sanitary leader, used their influence to promote public health legislation. Pardo (1829–89), one of the fathers of South American obstetrics, served as Secretary of State and ended his days as minister to Portugal. His even more prominent successor in the Buenos Aires medical school, Fernández, signaled his tenure as minister of education by a series of most beneficial changes. Rawson (1821–90), the first professor of public health in Argentina (1873), whose sanitary writings have become classical, a born orator, left behind as legacies of his passage through the Department of the Interior the introduction of the metric system and the taking of the first census. He died in poverty after declining a nomination to the Presidency. His chief, President Mitre, called him the human being who most approached moral perfection. A contemporary, Wilde, led a career just as interesting. A toxicologist and a sanitarian, excelling both as a speaker and a writer, he headed successively the departments of justice, public education and interior. The most difficult problems, as lay education and matrimony, were tackled fearlessly by him. Wilde represented his country in Washington, Brussels and Madrid, where he died. Aguirre, the founder of Argentine ophthalmology, found spare time to give to Congress and the governorship of the largest province in the country. Another noted ophthalmologist, Crespo (1852–93), devoted part of his short life to serve as Speaker of the House of Representatives. J. J. Montes de Oca (1806–76) presided successively over both branches of the Buenos Aires legislature, and his son Augusto (1831–82), a pioneer surgeon, shone as an orator in Congress and as Secretary of State. Of him it was said that he had served his country as effectively in peace as in war: against foreign enemies and against epidemics.

In Bolivia, Villanueva, the president-elect in 1925, had previously filled the positions of Surgeon General of the Army, Attorney General and Secretary of Education and Agriculture; Abecia, noted as a historian and journalist, discharged creditably the duties of Vice President of the Republic; Flores, the most active director of health the country ever had, proved equally at home during his incumbency as Secretary of Government or of Interior or Commerce; Mariaca used his term of office as Secretary of Education and Agriculture, to pro-

mote the public school system; Solares showed progressiveness as Secretary of Education; Muñoz, the dean of La Paz medical school, alternated these duties with those of Surgeon General of the Army, Secretary of War and of Education and Promotion; Sanjinés Tellería, another Surgeon General of the Army, and Bolivia's most noted surgeon, found time to act as rector of San Andrés University and Secretary of Education and Agriculture. An interesting figure is Vaca Diez de Santa Cruz, the great colonizer who introduced rubber planting in northeast Bolivia and died in a shipwreck in the Ucayali river in Peru.

In Brazil, Monteiro, a physician known for his work on beriberi, was elected vice-president. Other noted medical men who made their mark in politics are Azevedo Sodré, the founder of the best known medical journal in the country, *Brazil Medico*; Medeiros, the public health pioneer who died tragically in an airplane crash on Santos Dumont's arrival at Rio in 1929; and especially Neiva, who has made a name for himself, also as a sanitarian and a scientist.

In Chile, Aguirre, the dean of the Santiago medical school from 1850 to 1870, governed provinces, served eight terms in Congress and presided over the first national medical congress in 1890; Carvallo Elizalde, another dean of the medical school, found recognition of his congressional services in an appointment as secretary of justice and education; Orrego Luco, a journalist, writer, historian, presided over the House of Representatives and headed the department of interior and education; and Puga Borne, organizer of the public health service, surgeon-in-chief during the Arequipa campaign of 1882, did research work, wrote hundreds of papers, became a senator, served as secretary of state and public worship, and signaled his term as minister of justice and education by founding schools for nurses and dentists, opening public libraries, improving the teaching of pharmacy and obstetrics; and Puelma Tupper, a former chief of the army and navy medical services, who used his congressional tenure to promote laws on vital statistics and compulsory vaccination. The movement that upset Ibañez' government owed actually its success to the attitude of the Medical Association, which, indignant at the killing of one of its members, called for a professional strike which proved successful. When popular government seemed in danger recently, it was a physi-

cian who took upon himself the task of organizing a Civil Legion, whose very first parade proved by its discipline and size its power to protect both liberty and order.

The Colombian list is quite imposing: Caldas, while not a physician, was Dr. Mutis' best loved pupil, continued his botanical work and inaugurated the astronomical observatory planned by his preceptor. In trying days, he turned his science into more practical channels, organized the first firearms factory to help the freedom movement, acted as general adviser to President-Dictator Corral and was shot by the Spaniards in 1816. Merizalde, the first Surgeon General of the army, an ardent polemist and voluminous writer on medicine as well as on other subjects, the creator of the new medical school, was a member of the famous Ocaña convention (1828) and of the assembly (1831) which organized Colombia as a separate nation. He was exiled by Bolivar, because of his friendship for Santander whom he attended in his last moments. Fernandez Madrid (1789–1830) led an even more interesting life, combining diplomacy, poetry, playwriting, politics and journalism. His medical writings embrace goiter, dysentery and climatology. When only 22, in 1811, he was one of the leaders in making Cartagena take the decisive step for independence. An envoy to Bolivar, whose faithful assistant he became, and charged with the government of the country, it fell to him the sad task of surrendering to the Spaniards and taking the blame for others' faults. President Santander, however, appreciated his merits and appointed him his agent in Europe, and next the first Colombian minister to England. Another man of the times was the mysterious Argamil, a Frenchman misidentified with a number of 1793 revolutionists. He practiced medicine illegally in Colombia, got implicated in plots against Bolivar and was imprisoned for his political views on more than one occasion. At a later date we find Archila, who served in the senate, presided over the house of representatives and filled successively practically every cabinet post, including war, treasury and state; Barberi, who opened a hospital for children as a tribute to his dead wife; Buendia, the founder of the National University and first president of the National Academy of Medicine; Corpas, the rector of the medical school, who has served as secretary of education; Delgado, whose political activities have included participation in civil war,

exile in the United States, the presidency of the liberal party and a term as secretary of agriculture and commerce; Cuervo Márquez, always in demand to head medical societies and congresses, a student of medical geography, president of both houses of Congress, secretary of the Interior and of the Treasury; Jiménez López, who alternates the practice of his profession with administration of State affairs; and finally, the revered Lombana Barreneche, for 50 years a professor in the Bogota medical school, a senator and vice-president of the house of representatives, who was buried at the public expense.

One of the most tragic events of Cuban history is the shooting in 1871 of eight medical students, unjustly charged with the profanation of a Spanish patriot's grave. These boys were the martyrs of the revolt whose death kept alive the hatred against Spain. During the 1868 and 1895 revolutions, high positions were filled among the rebels by del Castillo, one of the leaders, who fell on the battlefield; Lorda, one of the fifteen to proclaim in 1869 Cuban independence and later secretary of war of the rebel army; Ortiz Coffiny, García Cañizares, who presided over the house of representatives after Cuba became a nation; Domínguez Roldán, later secretary of education; Núñez, a dentist, elected to the vice-presidency of the Republic; Tamayo, the father of Cuban bacteriology, secretary of government both under American rule and under the first President; Hernández, chief of a political party and Vice-President of the Republic; Figueras, a senator and political leader; Malberti, President of the House of Representatives. Turning to the present, Verdeja was Speaker of the House of Representatives and once nominated for Vice-President; Fernández, the ophthalmologist, was Secretary of State. Physicians had a very prominent part in the recent change of government in the island, and one of them, Ferrer, was one of the leaders in the movement. It is almost idle to recall that both President Mendieta and his predecessor, Dr. Grau San Martin, are physicians.

Central America yields to none in her choice of medical men for responsible governmental positions. Molina, the protophysician of Guatemala, was editor of one of the newspapers that paved the way to freedom, a member of the first Central American congress in 1823 and of the governing triumvirate; envoy to Bolivar with whom he signed the first treaty ever entered into by Central America, repre-

sented his country in the historical congress at Panama in 1826 and became successively Secretary of Treasury, War and State, and of Education, and finally (1829–30) President of Central America. He shines especially as the liberator Morazán's faithful lieutenant. In Guatemala, Toledo Herrarte, the teacher of a whole generation of physicians, was also Secretary of State, and Aparicio did equally well as dean of a medical school and as Secretary of Education. In Costa Rica, Montealegre, an English graduate, was President (1859–63), had a new Constitution enacted and died in 1887 in San Francisco, where he practiced for years. His successor Jiménez, whose centennial was celebrated in 1923, served two terms as President, was a member of the 1859 constituent assembly, pacified the country, developed roads and education, organized the public school system, promoted the inter-ocean railroad and was proclaimed emeritus son of the country for his public services. Another physician-statesman was Dr. Carlos Durán, a remarkable surgeon, who first diagnosed beriberi (1899) and hookworm disease (1906) in Central America, founded the insane asylum, was secretary of the interior, president in 1890 and again a candidate in 1914. In Salvador, Zaldívar (1834–96) had a varied career as professor of physiology and hygiene, secretary of war and president, being one of those to do most for the embellishment of the Capital. One of his successors was Araujo, a prominent surgeon who organized the 1911 national medical congress. Other noted physicians in public life have been the two Silvas, Barón, the secretary of education, and Quiñónez, who after heading the departments of interior and war, rose to the vice-presidency. In Nicaragua, Cañas gave up medicine for diplomacy and literature. Sacasa, first occupying the presidency through his predecessor's death, was then elected on his own but deposed by a revolution in 1893. His son, another physician, is now President of Nicaragua. The vice-president, Dr. Espinosa, is also a medical man. In Honduras, three physicians, Drs. Beltrán, Mejía Colindres and Paz Baraona, the present minister to the United States, have been presidents. Dr. Paz Baraona is probably the only living physician whose portrait appears on postage stamps. Two of the chief executives of Panama have been physicians, and one of them, Dr. Amador, was also one of the leaders for independence, and for his services was made the first president of the

Republic. His son, also a physician, was Panama's minister to France, was presiding at the time of his death over the League of Nations Council and served as captain in the U. S. Army medical corps during the Spanish-American war. Another physician, Dr. Castillo Nájera of Mexico, has also presided in recent years over the Council. (*See note 1.*)

In Ecuador the outstanding politically inclined physicians include the former president, Dr. Ayora, the country's best known surgeon; Cárdenas, the rector of the Quito university and President of the Senate; Barahona, a former vice-president of the House of Representatives, and Yerovi, the Maecenas of the greatest Ecuatorian writers, who when Secretary of the Treasury in 1898, completely reorganized his department and did much for the modernization of Guayaquil. In Uruguay, Navarro, the skilful surgeon, who in 1926 completed, amidst public rejoicing, 30 years of medical teaching, has just been elected Vice-President. In Paraguay Peña was first Secretary of State and then President; Velázquez, senator and Secretary of State, and Pérez, a noted orator, Secretary of State. (*See note 2.*)

If we turn to Peru both important men and deeds loom up. Odriozola, when secretary of education in 1876, reorganized the medical school. Barrios, the founder of the Lima Academy of Medicine and of *El Monitor Médico* and dean of the medical school, filled the posts of President of the Senate, Minister of Public Works and head of one of the controlling political parties. Ganoza was Minister of Justice, Worship and Education, and Premier in Leguia's first cabinet, President of the Senate, Chairman of the convention nominating Leguia in 1918 and of the campaign committee in 1919. Sosa, the dean of the profession who died last year, in addition to Surgeon General of the Army, President of the Academy of Medicine and Dean of the Medical School, had been Secretary of the Interior and Vice-President of the Republic. Basadre, during his student days fought against the Spaniards in 1866 and was one of the leaders rescuing President Balta when imprisoned by the Gutiérrez brothers in 1872, took a creditable part in the war with Chile and became eventually a senator and Leguia's Minister of Government and Premier. Flórez, the father of Peruvian bacteriology, when 12, had already helped to defend Callao against the Spaniards in 1866; when 14, shared in Castilla's

and Canseco's revolts; became one of the founders of the Democratic and Liberal parties, a senator and Secretary of Education and Justice in Pando's last administration.

In Santo Domingo one of the presidents was Báez, the dean of the medical school, and in Puerto Rico Betances, the leader of the one revolt against Spanish rule in the island, spent the rest of his life in Paris as representative of the Cuban rebels and physician to the Spanish colony. While there he became a friend to another physician, Rizal, whose plans for the freedom of the Philippine Islands found in him warm encouragement. Another Puerto Rican doctor, Barbosa, headed for years one of the two leading parties and practically controlled the government. To a physician, Dr. F. Henríquez Carvajal, Santo Domingo again turned in 1916 as provisional president when trying to ward off American intervention, and a patriot, not a professional politician, was wanted. (*See note 3.*)

Mariano Hidalgo, the Mexican liberator's younger brother, followed his elder to the battlefield and acted as treasurer of the army. On his capture by the Spaniards and refusal to testify, he was shot after his illustrious brother. On the other side of the fence we may find Montaña, entitled to credit in so many other respects, who rushed into an undignified and uncalled for attack against the noble priest who called the Mexicans to battle for independence. Gómez Farias, while acting president, reorganized and reopened (1833) the national medical school, took the first steps in educational reform, opened the first night schools, founded the National Library. During the first cholera epidemic in Mexico not only did he direct the campaign but attended patients and even helped them out of his own pocket. Outstanding among medical men in modern times is Dr. Puig Casauranc, an author and journalist, who has filled several cabinet portfolios, including that of secretary of state at present. A noted surgeon is now in exile in the U. S. for having served in Huerta's cabinet and being blamed for some mishap.

In the case of Venezuela, physicians appear in the very front during the struggle for freedom. Manso marched with the army from 1812 to 1815 and was among the faithful 250 who sailed with Bolivar from Haiti in the 1816 expedition, alternating after the victory his duties as a health officer and army surgeon with those of a senator. Palacio,

after studying both law and medicine, gave up a university chair for the revolutionary cause, followed Miranda, attended the memorable 1811 and 1819 congresses, secured war supplies abroad, and while serving as Bolivar's Secretary of State and Treasury, died suddenly from an aneurysm. Arvelo, among the highest in Venezuelan medical annals, was appointed surgeon-in-chief of the army by Bolivar and after being disabled by a bullet wound in his chest, served as senator and member of the Supreme Council of State. Alamo, one of the signers of the Declaration of Independence on July 5, 1811, escaped when about to be shot. No such luck attended Salias, the poet and martyr. Among the first to plot the revolt with Bolivar, whose schoolmate he was, a competent writer both on medicine and politics, a pioneer in taking up vaccination he was shot by the Spaniards when captured on board a ship. On the other side of the fence we find Gomez who, disappointed at not being chosen to represent Venezuela in London, threw in his lot again with the royalists, and was blamed for Monteverde's excesses against the patriots; Cabrera, who after shining in the 1811 Congress and the Constituent Assembly at Valencia, left the country rather than submit to Bolivar; and finally the embittered Diaz, a foundling whose hatred for the Liberator drove him away to Puerto Rico, where he became the insular treasurer. At a later period we come across Acevedo, acting for a long period as President of the Republic; Diez, also acting President; Monzón, who died while serving in that capacity; Villanueva, orator, writer, founder of the *Gaceta de los Hospitales* in 1889, Vargas' first biographer, Secretary of the Interior and acting Chief Executive on President Alcántara's death; Casañas, the resourceful Secretary of the Interior who commanded the army against the revolutionists in 1892. The post of Secretary of Education has been held with honor by Chirinos, Rivero Saldivia and Guevara Rojas who reformed (1913–1917) the public school system.

We can do no better than epitomizing these remarks with a reference to the three physicians who perhaps best embody the spirit of public service in Latin America. The three were contemporaries, lived in neighboring countries, both before and for a while after emancipation from Spain under the same rule, and it was their common lot to render able and prominent service to the cause of Latin American independ-

ence. These three men are Espejo, Unanue and Vargas. Espejo (1740–1796), a public health pioneer, an enemy of quackery, if not the first, the most articulate enemy of Spanish rule, a most effective polemist, was also the first public librarian and the first journalist in his country, and died in jail for his convictions, after pleading, even before Bolivar, whom he anticipated, for inter-American union. Unánue (1755–1833), an institution rather than a man, had to give up his beloved research and practice, to serve his country. His versatile mind cultivated statesmanship, finance, philosophy, archeology and oratory. To him, both Bolivar and San Martin turned for help in their campaigns. When giving up the command he had held during Bolivar's absence in his capacity as premier, the Liberator told him he could well say to Congress: "When I took up this task there was no nation; now here she stands: glorious, free and pacified." It has been very properly said that what medicine lost through his political activities, his country gained. When the time came to select the outstanding Peruvian statesman for the Hall of Heroes in the Pan-American Union Building, it was not a soldier, not a president, but Unanue who was selected. There his bust stands, the only physician chosen to represent a country, next to Washington, Bolivar, Sucre and the other creators of nations. Vargas (1786–1854), the other member of this triumvirate, was the youngest. He also, as Unánue, reorganized medical education, and also was Bolivar's steadfast friend. First and greatest of Venezuelan surgeons and researchers, his name is borne by one of the two divisions of the Federal district, the largest hospital in Caracas and a square at La Guaira; statues to him have been raised at La Guaira and both at the hospital and the national university at Caracas. Vargas' political experience began early in youth when, because of his patriotic work, the Spaniards threw him into jail in 1813. On his return from exile many years later, he attended the Bogota Congress and the Valencia constituent assembly, being one of the makers of the first constitution of Venezuela. He was elected President in 1835, his character never showing higher than on his being deposed and exiled by an armed mob. On being reinstated in 1836, he resigned rather than submit to military dictation. Afterwards he concentrated on his profession, but serving in the senate and the national governing council. An appointment in 1840 as

ambassador to the four most important powers in Europe was declined, as he felt he could serve his country best in the medical school. His loyalty to Bolivar survived the passing away of his chief, as proved by the heartfelt tribute he rendered when the Liberator's remains were repatriated in 1842. Vargas, incidentally, died in New York.

It may be asked what are the underlying causes of this political prominence on the part of physicians. They may be briefly summarized. First, an ardent patriotism which places country above all other considerations. Secondly, a degree of general culture, seldom found outside Latin countries, leading in its turn to an interest in things outside the profession. Had my subject, instead of public life, been some other branch of human effort such as literature, the story of achievement would have been equally impressive. Finally, we must not leave out of account imagination, the sacred fire, which by fostering oratorical gifts requires a stage to exercise them. When Monckeberg, one of the leaders of the profession in Chile, was asked for an address for the centennial exercises of the medical school, he promptly chose as his subject, "What Physicians Have Done for the Country, Outside of Medicine."

It must be stressed here that these men, as a rule, did their work, not by divorcing themselves from their profession, but as is sufficiently apparent from these remarks, as a civic duty which, once discharged, would permit them to take up the more congenial task of holding at bay the forces of disease and dissolution. This point must be emphasized, since at the very recent annual congress on medical education of the American Medical Association, two speakers went so far as to assert that the larger group of medical students in Latin America chose this course purely as a means of securing a liberal education. These men seemingly were unaware of the fact that the surplus of practicing physicians is a problem very much to the front in all parts of Latin America and has led to serious proposals for curtailing the enrolment, as has already been done by law in Haiti.

Nietzche, in his "Only Too Human" intimates that religion having gone into the discard, medicine may well take the leadership of the world. Yet Couto, the patriarch of Brazilian medicine, has said that "physicians are not by nature politicians, and when they turn to

politics, they prove very poor at it." His explanation is that their errand in this world is one of mercy and pity, and the successful politician must be ruthless.

It is a fact that physicians in high places, when faced with crises have often been reproached with failure to show the necessary firmness. Yet when Carujo, one of the most violent partisans ever crossing the pages of history, challenged Vargas with his "Success in life is reserved to the brave," the old patriot promptly reproved him, "No, sir, the real success is for the honest and true."

A French physician, on leaving Argentina, quoted Virgil's golden lines

> "Salve, magna parens frugum
> Saturnia tellus, magna Virum."

Let us close repeating that salute to Latin America, "Hail, generous and fruitful Land, Mother of great men and friendship."

NOTES

1. When the Portuguese surgeon Dr. Vasconcellos was recently elected president of the Council of the League of Nations, wags promptly chuckled that the world situation must indeed be desperate when a physician was called to the helm.

2. We must not forget Espejo's brother-in-law, Mejía, a physician, and withal a philosopher, a theologian and a jurist, whose eloquent periods rivaled the divine Arguelles' at the 1812 *cortes* at Cadiz, who died in 1813, of yellow fever, of all diseases, in Spain. His fellow countrymen, in recognition of his able defence of their rights, have named after him a province and the first college at Quito.

3. We must not leave the West Indies without recalling that in Haiti, Bobo (1873–1929), a poet, a writer and a musician, author of a national hymn, proficient in various foreign languages, on his return from a political exile and professional success in Jamaica, became Secretary of the Interior in Theodore's administration. Had he not made the blunder of agreeing after Guillaume's downfall to the dissolution of the chambers, everything pointed to his selection as President.

THE EARLY LITERATURE ON CHRONIC CYSTIC MASTITIS

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The literature on chronic cystic mastitis of the breast illustrates the tedious clinical and pathological studies required to establish the identity of a disease process before experimental methods can be devised to demonstrate its exact nature and etiology.

The difficulty in separating chronic cystic mastitis from infections and other benign tumors of the breast as well as separating the proliferative from the cystic type appears in the earliest reports. Sir Astley Cooper (1) in 1831 distinguished one form of chronic cystic mastitis, and described undoubted cysts belonging to this category. He reported a typical case occurring in a woman aged twenty-eight which became painful at the approach of menstruation. He, however, confused this condition with benign intracystic papilloma and with cystic degeneration in large fibroadenomas. It was he who first described the blue tint typical of the unopened cyst at operation. He recommended local removal or simple opening with a lancet with insertion of a piece of linen to bring about adhesive inflammation. Cooper used the term hydatid or cystic tumor.

Brodie (2) (fig. 1) also described this condition in 1846 and mentioned the possibility of the cysts being multiple. He believed that the cysts were originally "formed by the dilatation of the lactiferous tubes." He was the first to report its restriction to the sexual period saying "I have never known the disease to occur previously to the age of puberty, nor after the middle period of life and if I am not much mistaken it is more common in single than in married women." Again Brodie included with his cases cysts complicated by papilloma. The smaller papillomatas were evidently parts of diffuse adenosis, in some cases. Brodie was the first to report a spontaneously disappearing tumor. He believed in expectant treatment with liniments in

the cystic stage and excision when firmer nodules developed. Brodie suggested the name of sero-cystic tumor.

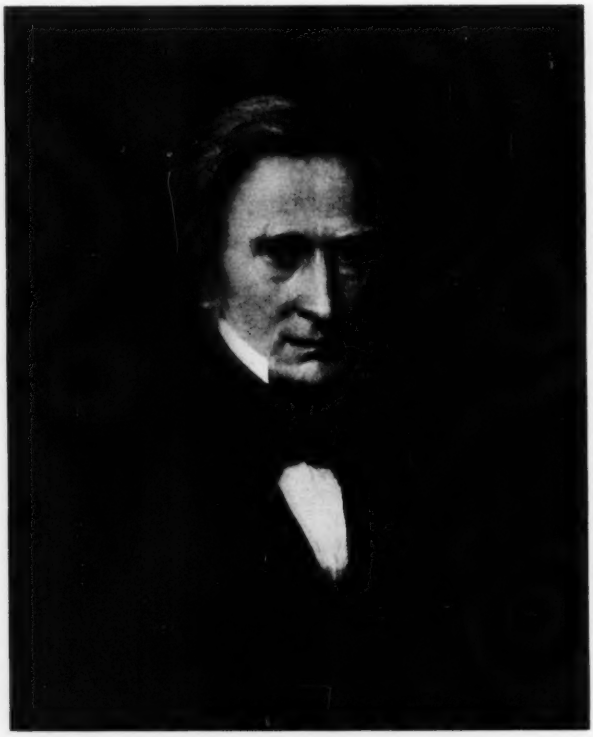

FIG. 1. PORTRAIT OF SIR BENJAMIN C. BRODIE, PAINTED BY G. F. WATTS IN 1860, AND PHOTOGRAPHED BY SIR BENJAMIN V. S. BRODIE

In 1846 Brodie described the cystic type of chronic cystic mastitis and called attention to its prevalence in childless women between adolescence and the menopause.

Velpeau (3) in 1856, described the condition as serous cysts of the breast. He recommended treatment by iodine injections and compared them with hydrocele. The iodine injection he recommended

for only cysts exceeding the size of a hazel-nut. The smaller cysts and those of solid tissue were treated by extirpation. He differentiated cysts from the adenoid tumors, and recorded the fact that some were unilocular, others multilocular.

All three of the above authors distinguished chronic cystic mastitis from cancer and all of these authors cited cases of patients who remained well for a period of years.

Reclus (4) in 1883 discussed the condition under the term "cystic disease of the breast," believing that in its multiple form it had hitherto been undescribed. He believed that the "multiple disseminated" and "bilateral affection of cystic production" distinguished the cases observed by him from the simple cysts of the breast described by his predecessors. Reclus called attention to cases of chronic cystic mastitis in which the disease appeared in the remaining half of one breast following a previous excision and then appeared in the remaining breast following the complete removal of the first breast. He described this multiple condition in two women, one aged thirty-five and the other aged forty-five. He called attention to the absence of fluctuation in the large cysts. His microscopic description is more adequate than that of Lebert recorded by Velpeau. He quotes the histologic studies made on his cases by Brissaud (5). The interstitial tissue was found healthy. The cysts were not thought to involve the lacteal conduits but the acini. Epithelial activity was noted in the acini but no adequate description of the hyperplasia was given.

Schimmelbusch (6) in 1892, called attention to the same bilateral affection of the breast as described by Reclus, but emphasized the variety in which the cysts remained small and in which the epithelial hyperplasia in the acini gave rise to diffuse "shotty" nodules. He called the condition "cystadenoma" and stated that "the pathological process consists in an increase of the acini in the single lobules which show a great similarity to the proliferation which is found in a lactating breast. . . . . Epithelial cells pile one upon the other and spread the diameter of the acinus. . . . . Through this, when the central lying epithelial cells collapse is the cyst formed" (fig. 2). He recorded three cases among forty-three cystadenomas in patients who later developed cancer (7 per cent). He stated: "It is indeed possible that cystadenoma may be placed in the category with certain epithelial

conditions of irritation . . . . which are in a sense benign but have a tendency to become malignant." He advocated bilateral mastectomy.

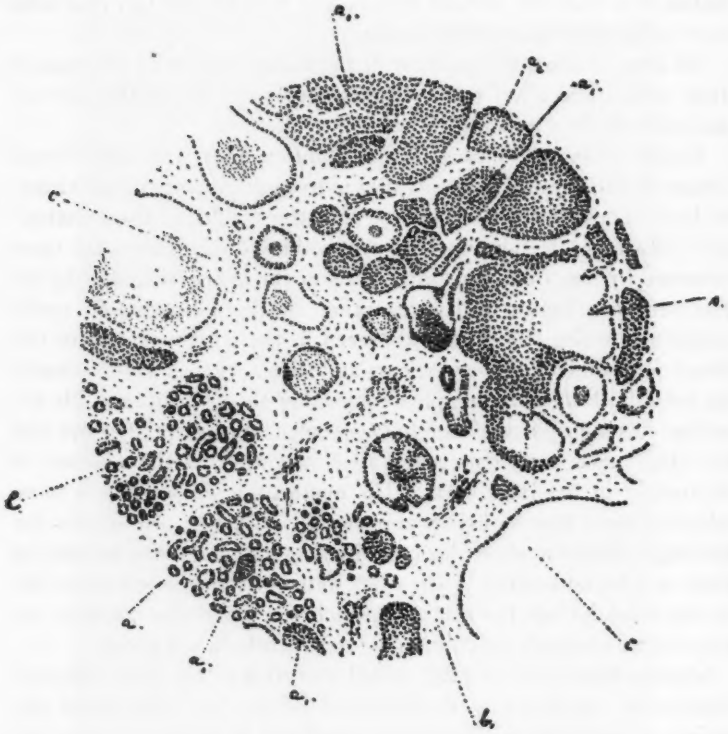

FIG. 2. DRAWING OF THE MICROSCOPIC APPEARANCE OF A BREAST IN CHRONIC CYSTIC MASTITIS FROM THE ORIGINAL CONTRIBUTION OF SCHIMMELBUSCH PUBLISHED IN 1882

Schimmelbusch was the first to give an accurate histologic account of the proliferative form of chronic cystic mastitis under the term "cystadenoma." He also called attention to the probable relation between this phase of the disease and cancer.

König (7), in 1893, gave the disease the name of "chronic cystic mastitis" and introduced the inflammatory theory.

From this review of the older literature it will be seen that previous to the present century the blue dome cyst typical of sixty per cent of

the cases of chronic cystic mastitis had been well described. The multiple bilateral nature of cystic disease had been emphasized by Reclus and the variety of chronic cystic mastitis marked by adenomatous proliferation had been reported by Schimmelbusch. Cooper recognized the benign nature of the cysts. Brodie noted that the disease was confined to the sexual life of women. Velpeau distinguished the condition from fibroadenoma. Reclus noted the tendency of the disease to occur or re-occur in the opposite breast and Schimmelbusch likened the lobular proliferation to the lactating breast and suggested the possibility of malignant change in one form of chronic cystic mastitis. Yet the essential distinction between the cystic and adenomatous form of the disease had not been made and the suggestion that the condition, while benign, might be precancerous served to throw the problem of treatment into a confusion that has persisted up until the present time.

In the present century Bloodgood (8) contributed the most extensive study in 1921 and brought all of the varieties of chronic cystic mastitis together into eight sub-groups based upon the size of the cysts and the presence or prominence of non-encapsulated adenomatous or cystadenomatous areas. He recorded 174 cases in which large cysts predominated, 28 cases in which diffuse cystic disease occurred and 61 cases in which there was diffuse dilatation of ducts with or without small cysts; in 8 cases cysts were of the galactocele type—a group of 271 cases in all of the cystic type. In the adenomatous groups he recorded 48 cases with non-encapsulated adenomatous areas, 18 with non-encapsulated cystic adenomatous areas and 13 in which there was diffuse cystic adenomatous hyperplasia, described by himself in a previous report as senile parenchymatous hypertrophy —a group of 79 cases in all of the adenomatous type. He came to the conclusion that chronic cystic mastitis as a whole was not a precancerous lesion "but that in the isolated and diffuse non-encapsulated cystic adenoma it may be safer completely to remove the breast or to perform the complete operation for cancer because of the incidence of cancer in 2 out of 31 cases."[1]

[1] In the past few years Bloodgood has advocated the local operation only for these cases to which he has given the name "Borderline Tumors." His present opinion is expressed in the appended discussion.

In 1928 Semb (9) reported a very thorough study under the title of Fibro-Adenomatosis Cystica Mammae. He reported 144 cases observed during a period of two and one-half years. His group was divided into 44 cases of fibroadenomatosis simplex microcystica, 73 cases of fibroadenomatosis cystica simplex and 27 cases of fibroadenomatosis cystica papillomatosa. His first group of fibroadenomatosis simplex microcystica cannot be accepted because of the inclusion of cases of simple fibroadenoma. The other two groups of fibroadenomatosis cystica and fibroadenomatosa cystica papillomatosa correspond roughly to the division of Bloodgood into cystic and adenomatous types.

In a similar manner Cheatle and Cutler (10) in their recent monograph on "Tumors of the Breast" in 1931, separate cystophorous desquamative epithelial hyperplasia from the more pronounced cases of hyperplasia termed by them benign epithelial neoplasia. Thus Bloodgood, Semb and Cheatle and Cutler have joined Schimmelbusch in separating the type of chronic cystic mastitis in which epithelial hyperplasia predominates from that in which a few large cysts dominate the clinical and microscopic picture. In their writings all these authors agree in attributing the possibilities of malignant change to the adenomatous rather than to the cystic type of the disease, yet none have succeeded in definitely untangling the apparent microscopic and clinical overlap between the two conditions. All of these authors believe the two types of chronic cystic mastitis were essentially two phases of the same disease and capable of progressing one into the other. Schimmelbusch believed that he was but describing the true pathologic beginnings of the cystic conditions detailed by Reclus. Semb believed the two varieties differed in degree but not in kind. Cheatle and Cutler believed that the cyst may give rise later to areas of adenosis, one supervening directly upon the other.

Throughout this period of over one hundred years practically nothing of an experimental nature was contributed to substantiate the conclusions drawn from clinical and pathological studies. While the condition known as chronic cystic mastitis was recognized as distinct from cancer and different from infectious mastitis, its relation to the neoplastic process or to normal physiology remained an unsolved problem.

In the last decade however, the isolation of hormones from the placenta, from the ovarian follicle and corpus luteum, and from the pituitary, with the discovery of new methods for the biological assay of these hormones has paved the way for the experimental interpretation of this disease. With the opening of this new approach to the problem there is definite promise of ultimately explaining the alterations in the structure of the breast and demonstrating the rôle played by physiological processes in the production of this disease. From the standpoint of these studies now in progress the pathological division of chronic cystic mastitis into a cystic and a proliferative form seems justified; and apparently the cystic type is related to the hormone of the ovarian follicle, while the proliferative type is under stimulation from the hormone secreted by the corpus luteum.

Note: The author acknowledges with thanks the valuable aid of Susan Pijoan, in preparing the translations from the original contributions.

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Discussion by Joseph Colt Bloodgood, Baltimore

Dr. Geschickter has asked me to write a brief note as a discussion of his remarks.

In the first ten cysts of the breast operated upon by Halsted and his associates beginning in 1889, three were treated by the complete operation for cancer. In two cases an assistant resident surgeon explored the clinically benign tumor; both proved to be thick-walled cysts, and, as frozen sections were not then in use in the operating room a diagnosis of cancer was incorrectly made from the naked eye appearance. Later microscopic study failed to find cancer in the thick walls of the cysts, and no metastasis to the glands; both patients lived twenty-five years without further trouble in either breast. You will observe, from Geschickter's quotations that Cooper, Brodie, and Velpeau, who expressed the best opinion up until 1850, noted no relationship between cysts of the breast and cancer. Yet, when Dr. Halsted explored a clinically benign tumor of the breast in 1894 and found it to be a large simple cyst, he first removed the breast and, finding no evidence of malignancy there from the naked-eye appearances, he remarked to me that he would do the complete operation for cancer, because he feared there might be a recurrence, should the microscope reveal evidence of malignancy in the breast. Halsted then had a faint fear of some possible relationship between cancer and cysts of the breast. There were many other surgeons at that time who shared this fear. But that was the only example in which Halsted did the complete operation for cancer in a case of cyst of breast. In 1896, Finney removed for the first time in Halsted's clinic what was then called a simple cyst of the breast, and in 1897 I performed for the first time this conservative operation. These two patients are living today.

The next point I wish to emphasize is that I am inclined to feel that Schimmelbusch in 1892 and myself in 1906 (Surgery, Gynecology and Obstetrics, December 1906, Vol. 3, P. 731) concluded that chronic cystic mastitis is a precancerous lesion, or that there was great danger that cancer might develop in it, on a mistaken microscopic diagnosis. We failed to confirm our diagnosis of malignancy by a follow-up of the ultimate results. None of the examples of Schimmelbusch's disease reported by me in 1906 died of cancer, and I am quite confident that these contributions of Schimmelbusch and myself added to the fear of cancer in the minds of many surgeons and pathologists.

In my review of the publications of Semb in 1928 and Cheatle and Cutler in 1931, I expressed the same conclusion—that these authors had made the same mistake as we had made more than twenty-five years ago. Between this first publication of mine in 1906 and the one referred to by Geschickter in the Archives of Surgery for November, 1921 (Vol. 3, p. 445)—a period of fifteen years, I had numerous examples of specimens sent to me for diagnosis in which I found areas of Schimmelbusch's or Reclus's disease so suspicious of malignancy that I advised the removal of the breast or the complete operation for cancer. As I gradually followed these patients, none developed cancer nor died of cancer, and, based upon

this very careful study I concluded in my major reports on the Pathology of Chronic Cystic Mastitits of the Female Breast that there was little, if any, evidence that chronic cystic mastitis is a precancerous lesion and that cancer in the breast the seat of any type of chronic cystic mastitis, was a much less frequent occurrence than in the normal breast, in the pregnant or lactating breast, and that cancer was most common in the senile breast, and this conclusion has much more evidence in its favor today.

In the American Journal of Cancer (January, 1932, Vol. xvi, P. 103), I have brought up to date my experience with Borderline Tumors of the Breast. Since this publication in 1932, I have collected from recent cases, observed in my own clinic or sent me from outside sources, an almost equal number of these borderline tumors, and so far no borderline tumor has been associated with metastasis to glands, recurrence, or any evidence that the tumor was malignant in the same sense as a scirrhus or medullary carcinoma. Sections of borderline tumors have been submitted to a number of experienced pathologists since 1915, and there has always been a difference of opinion as to malignancy. From 1915, to almost 1925 the majority favored malignancy; since 1925 an increasing majority favored benignancy. On fully developed cancer of the breast there is always agreement as to malignancy.

PETER LUDVIG PANUM (1820–1885)
Reproduced through the kindness of Dr. V. Meisen, Copenhagen

TEXTS AND DOCUMENTS

BIBLIOGRAPHICAL BIOGRAPHY OF PETER LUDVIG PANUM (1820–1885), EPIDEMIOLOGIST AND PHYSIOLOGIST[1]

WILLIAM M. GAFAFER

Within the past few years references to the observations of Peter Ludvig Panum on the 1846 measles epidemic on the Faroe Islands have appeared occasionally in epidemiological publications. His subsequent work in epidemiology, and his labors in hygiene and public health, the physiology and pathology of the circulatory system, physiological optics, medical education and reform, and many other subjects, have remained practically unnoticed at least on this side of the Atlantic. Because of this lack for a half century or more of recognition of the work of a truly great scientist the publication of an annotated bibliography with an adequate introduction is highly desirable if not actually necessary. It is with this thought that the present paper is offered.

An early writer in the discipline of modern epidemiology and the founder of scientific physiology in Denmark, Panum first saw the light of day on December 19, 1820, in Rønne on the island of Bornholm almost a hundred miles southeast of Copenhagen. In the same year were born such diverse personalities as A. E. Becquerel, Blanche, Blaney, von Gerlach, Günsburg, Henoch, Humphry, Iljinski, Laehr, Lewin, von Luschka, Maschka, J. L. Milton, Heinrich Müller, von

[1] Paper No. 177 from the Department of Biostatistics, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, Maryland.

Acknowledgements must be made to the following libraries for courtesies extended: Library of the Surgeon General's Office, Library of Congress, Library of the New York Academy of Medicine, Library of the Medical and Chirurgical Faculty of the State of Maryland, The New York Public Library, The John Crerar Library of Chicago, Boston Medical Library, Peabody Institute Library of Baltimore, Library of the College of Physicians of Philadelphia and the William H. Welch Medical Library of the Johns Hopkins University.

Niemeyer, Ritter von Rittershain, Sayre, Spencer, J. H. Stirling, Isaac Todhunter, Tyndall and Francis Wharton.[2] In the same year electromagnetism was discovered by Oersted and Arago, and in the preceding year Laënnec discovered the stethoscope.

The father of Panum, Jens Sévérin Nathanael Panum (1792–1836),[3] a graduate of the University of Copenhagen, was a regimental surgeon at Rønne and a man of some literary ability; in addition to his contributions to scientific journals he published, among others, a guide to the island of Bornholm, and a description of the K. Christians-Pflegehaus of Eckernförde. Both works are octavos and appeared with a Schleswig imprint in 1830, and 1833, respectively. In 1828 the family removed to Rendsburg, Schleswig-Holstein, where the father assumed the duties of a Holstein artillery surgeon. He resigned this post at the end of the year for one of the directorships of the K. Christians-Pflegehaus of Eckernförde, Schleswig-Holstein, which he held until his death from typhoid fever in 1836.

With Kiel only twenty miles from Eckernförde it was natural for young Panum to begin his studies at the University in that city. Shortly thereafter, in 1840, he matriculated in medicine at the more distant University of Copenhagen, and qualified five years later.

In the following year, 1846, before he had reached his twenty-sixth

[2] For the purpose of further orientation, the following names with year of birth are subjoined.

1818: Bouchut, Du Bois-Reymond, Donders, Fresenius, Edward Jaeger, von Pettenkoffer, Semmelweis, Ludwig Traube, Karl Vierordt and T. S. Wells.

1819: Bardeleben, von Brücke, Credé, Foucault, von Frerichs, Gründer, W. T. G. Morton, E. A. Parkes, Ploss, Stokes and Voltolini.

1821: von Helmholtz and Virchow.

1822: Clausius, Douglas Galton, Francis Galton, Kussmaul, Mendel, Moleschott, Pasteur, Strecker, Moreton Stillé, Thiersch and Wallace.

In this connection, see a compilation by F. H. Garrison: Texts illustrating the history of medicine in the library of the Surgeon General's Office, United States Army, arranged in chronological order; Index-Catalogue of the Library of the Surgeon General's Office, United States Army, 2 ser., v. 17, 89–178, 1912. The same, revised and expanded, Bull. Inst. Hist. Med., Supplement of Bull. Johns Hopkins Hosp., **53**, 333–434, 1933.

[3] J. C. Poggendorf, Biographisch-Literarisches Handwörterbuch zur Geschichte der Exacten Wissenschaften, v. 2, 352, 1863. Dictionnaire Encyclopédique des Sciences Médicales, 2 ser., v. 20, 411, 1884 (art. by L. Hahn).

birthday his hospital training was interrupted for some time when the government sent him to the Faroe Islands to investigate the measles epidemic that was raging there. The epidemic continued from April to October and about 6000 of the 8000 inhabitants were attacked. His observations on the epidemic and on the social and hygienic conditions prevailing on the islands were subsequently published by him in *Bibliothek for Læger*, and in 1847, when he went to Berlin to study, he made the acquaintance of twenty-six-year-old Virchow who persuaded him to publish an abstract of the report in the first volume of the newly established *Archivs*.[4]

The year 1848 found Panum at the Almindelig Hospital in Copenhagen; his training was again interrupted when he took part in the Danish-German war as a surgeon in the Danish navy. In 1850 he was sent officially to the small seaport of Bandolm on the island of Laaland about seventy-five miles southwest of Copenhagen where there was a minor cholera epidemic. In his report are recorded thirty cases in ten dwellings, and fifteen deaths. This was the first cholera epidemic in Denmark and was present from July to September.

On February 24, 1851, Panum defended his dissertation, a study on fibrin, at the University of Copenhagen for the M.D. The following two years were devoted to graduate work at Würzburg under Virchow, von Kölliker and Scherer; at Leipzig under K. G. Lehmann, and at Paris under Wurtz and as the assistant of Claude Bernard. Upon his return to Denmark he was appointed professor of physiology, medical chemistry and general pathology at the University of Kiel, where he set himself the task of establishing a suitable laboratory.

In the meantime the Schleswig-Holstein controversy[5] became more and more complex and reached a definite crisis on November 15, 1863, when the male line of the reigning house of Denmark became extinct by the death of King Frederick VII. In January of the next year the war with Prussia and Austria was on, and in the spring Panum resigned his chair to accept a call from Copenhagen to fill the vacancy caused by the death of Eschricht. On October 30, 1864, peace was

[4] This abstract has been translated, and will be published separately in Isis.

[5] James Bryce, The Holy Roman Empire, 8vo, New York (A. L. Burt Co.), [1896]; supplementary chapter, 412–418, and appendix, note B. Ency. Brit., 11ed., v. 24, 335–340, 1911 (art. by W. A. Phillips).

Om

Fibrinen i Almindelighed

og

om dens Coagulation i Særdeleshed.

Inaugural-Disſertation

af

P. L. Panum.

Kjøbenhavn.

Forlagt af Univerſitetsboghandler C. A. Reitzel.

Trykt hos Kgl. Hofbogtrykker Bianco Luno.

1851.

FIG. 1. TITLE PAGE OF DISSERTATION
The original measures 19.3 x 12.7 cm.

signed and Denmark lost Schleswig-Holstein to the allies; in 1866 Kiel became a Prussian university. At Copenhagen as at Kiel his immediate concern was the building of a new laboratory. In 1884 he was the chief organizer and president of the Eighth International Medical Congress convened at Copenhagen. The professorship of physiology was held by him until his death from a rupture of the myocardium on May 2, 1885.

Since the appended annotated bibliography is, so far as the author knows, the most complete in print, it is hardly necessary to record further details of the life of Panum at the expense of becoming repetitious. It is sufficient to add that in the preparation of the bibliography the text and the footnotes of the material listed in the *Index*

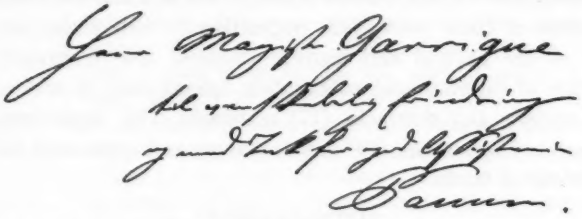

FIG. 2. SIGNED INSCRIPTION BY PANUM TO HENRI JACQUES GARRIGUE[S], 1831–1913, M.D., COPENHAGEN, 1872, AND A FORMER GYNECOLOGIST AND OBSTETRICIAN OF NEW YORK

See the Bibliography (40, and page 224 of 131); also, Am. J. Obs., **68**, 760, 1913, and Med. Rec., **84**, 118, 1913.

Medicus and the *Index-Catalogue of the Library of the Surgeon General's Office* were first examined. Attention was subsequently directed to contemporary abstract and review journals, scientific and quasi-scientific journals published in the Scandinavian countries, in Germany and in France, and to material dealing with Denmark and the Danes, Copenhagen, University of Copenhagen, and other appropriate subjects. Bohr in his obituary of Panum remarks, "Schon früh hatte Panum eifrig und eingehend mit den Naturwissenschaften sich beschäftigt wofür einige kleine Lehrbücher, welche er schon als Student herausgab, Zeuge sind." Unfortunately, it was not possible to find any of these "small textbooks" on the natural sciences, the fruit of his student days. A further reference to this early work, however,

occurs in the *Dictionnaire Encyclopédique des Sciences Médicales* where mention is made of *First Principles of Natural Science*, 1845.

The title page of the dissertation is reproduced through the courtesy of the Library of the Surgeon General's Office, and appears as figure 1. The inscription, figure 2, is reproduced through the courtesy of the Library of the New York Academy of Medicine.

The subject matter of the bibliography which follows may be roughly but conveniently classified thus, (1) epidemiology, (2) physiology and pathology of the circulation, (3) physiological optics, (4) experimental embryology, (5) physiology of respiration, (6) chemistry of metabolism, nutrition and foodstuffs, (7) pathological anatomy, (8) hygiene and public health, (9) bacteriology, (10) medical education and reform, (11) unification of Scandinavian scientific workers and the widespread publication of their work, (12) opposition to anti-vivisection, (13) history of the natural and medical sciences, (14) biography, (15) promotion of international coöperation among men of science, (16) critical reviews and abstracts, (17) textbooks, (18) improvement of technique and apparatus, (19) new technique and apparatus, and (20) new editions of books.

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[6] The following abbreviations are used: British = British and Foreign Medico-Chirurgical Review, Canstatt = Jahresbericht über die Fortschritte der gesamten Medicin in allen Ländern, Centralbl. = Centralblatt für die medicinischen Wissenschaften, Schmidt = Jahrbücher der in und ausländischen gesamten Medicin, and Virchow-Hirsch = Jahresbericht über die Leistungen und Fortschritte in der gesamten Medicin; R. = Række = Series. A few items with incomplete bibliographical data were not seen by the author. Unqualified second and subsequent citations contain abstracts, reviews or notices of the paper or book which they follow.

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the question of transfusion]. Nord. med. Ark., **7** (3), 1–82. Reprints issued with a five-page summary in French. Also in, Virchows Arch. f. path. Anat., **63**, 1–91, 1875. Virchow-Hirsch, **1**, 389, 391, 1875. Centralbl., **13**, 610, 1875. Schmidt, **187**, 86, 1880.

(72) 1875. Bestemmelsen af Afstanden imellem bægge Øjnes Omdrejningspunkter [On the determination of the distance between the centers of rotation of both eyes]. Nord. med. Ark., **7** (9), 1–10. Reprints issued with a two-page summary in French. Virchow-Hirsch, **1**, 253, 1875.

(73) 1875. Yderligere Oplysninger til Orientering i Transfusionsspørgsmaalet [Further remarks on the question of transfusion]. Nord. med. Ark., **7** (23), 1–28. Reprints issued with a six-page summary in French. Also in, Virchows Arch. f. path. Anat., **66**, 26–55, 1876. In this paper the views of O. Hasse on the transfusion of lamb's blood are reduced to an absurdity. Virchow-Hirsch, **1**, 329, 1876. Schmidt, **187**, 89, 1880.

(74) 1876. Fremstilling af det medicinske Undervisnings- og Examensvæsens Forhold i Danmark fra 1873 til 1876 [A presentation of matters relating to medical instruction and examination in Denmark from 1873 to 1876]. Forms Part 1 of Panum, E. Hornemann and others, Kortfattet Fremstilling af de Forandringer, som fra 1873 til 1876 ere foregaaede med Hensyn til det medicinske Undervisnings- og Examensvæsen og med Hensyn til Medicinalforholdenes administrative Ordning i Danmark, Sverige og Norge. Udarbejdet af den ved det nordiske Lægemøde i Gøteborg i 1870 nedsatte og ved Naturforskermødet i Kjøbenhavn i 1873 genvalgte Arbejdskomité [A brief presentation of the changes that have taken place from 1873 to 1876 in Denmark, Sweden and Norway with regard to the affairs of medical instruction, examination and administrative organization. Prepared by an appointed committee of the Scandinavian Medical Congress, Gothenburg, 1870, and a reappointed committee of the Congress of Naturalists, Copenhagen, 1873]. Nord. med. Ark., **8** (19), 1–46 (Part 1: 2–12). Pp. 11–12 contain a brief list of P.'s "communications" relating to this subject; a few of the entries without a place of publication are not included in this bibliography. It must be noted, in passing, that co-author Hornemann was the founder of public hygiene in Denmark. In this connection see, J. W. S Johnsson, Kjøbenhavnske medicinske Selskaber Festskrift i Anledning af Medicinsk Selskabs Jubilæum, 1772–1922, Avec un Résumé Français. 8vo, Copenhagen (L. Schmiegelow), 1922; p. 275.

(75) 1877. C. J. Salomonsens Studier over Blodets Forraadnelse [C. J. Salomonsen's Studies on the putrefaction of the blood]. Ugesk. f. Læger, 3R., **23**, 249–266. A review. Virchow-Hirsch, **1**, 142, 1877.

(76) 1877. Om Lysets Virkning paa Øjets Nethinde [On the effect of light on the retina of the eyes]. Tidsskr. f. pop. Fremstil. af Naturv., 5R., **4**, 81–108. Also in, Ugesk. f. Læger, 3R., **23**, 335–340, 1877. Nord. med. Ark., **10** (6), 10, 1878.

(77) 1877. Bidrag til Kundskab om Misfostrenes physiologiske Betydning [Contribution to the Physiological Significance of Monsters]. viii + 96 pp. + 2 plates, 4to, Copenhagen (Gyldendal). A part of the program at the celebration of the University of Copenhagen on the occasion of the birthday of His Royal Majesty.

(78) [1877.] Den physiologiske og den politiske Stat [The Physiological and the Political State]. 16 pp., 8vo, n.p. (n.pub.). An address delivered at the university celebration, April 11, 1877, on the occasion of the birthday of His Royal Majesty.

(79) 1876–1878. Studier over Gæring og Forraadnelse med særligt Hensyn til de mikroskopiske Organismers Andel i Fermentvirkningerne [Studies on fermentation and putrefaction with especial regard to the part played by microscopic organisms in fermentations]. Nord. med. Ark., **8** (25), 1–35, 1876, and **10** (4), 1–53, 1878. Virchow-Hirsch, **1**, 130, 1878.

(80) 1878. Beiträge zur Kenntniss der physiologischen Bedeutung der angebornen Missbildungen. Virchows Arch. f. path. Anat., **72**, 69–91, 165–197 and 289–324. Virchow-Hirsch, **1**, 254, 1878. Centralbl., **17**, 52, 1879.

(81) 1879. [With H. C. B. Bendz and C. Holten. Expression of opinion on de Fontenay's prize essay on color blindness.] Overs. o.d.k. danske Vidensk. Selsk. Forh., 19–23 (first pagination).

(82) 1879. Orienterende Oplysninger om Dyrplageri ved Dyrenes Benyttelse og om Menneskeplageri ved Dyrenes Beskyttelse [Orientating Details Concerning the Abuse of Animals in the Service of Man and the Abuse of Man in his Protection of Animals]. [1] + 47 pp., 2 ed., 8vo, Copenhagen (H. Hagerup). Ugesk. f. Læger, 3R., **27**, 453, 1879. Virchow-Hirsch, **1**, 193, 1879.

(83) 1879. Til Opklaring af nogle Misforstaaelser angaaende Vivisektionen og Dyrebeskyttelsen i Danmark; en ved Angreb nødvendiggjørt Redegjørelse og Fortsættelse til, "Orienterende Oplysninger om Dyrplageri ved Dyrenes Benyttelse og om Menneskeplageri ved Dyrenes Beskyttelse" [In Explanation of some Misunderstanding respecting Vivisection and the Protection of Animals in Denmark; a Reply to an Attack necessitating an Account and Continuation of, "Orientating Details Concerning the Abuse of

Animals in the Service of Man and the Abuse of Man in his Protection of Animals"]. 84 pp., 8vo, Copenhagen (H. Hagerup). Virchow-Hirsch, **1**, 193, 1879. P. records that he found it necessary to publish this and the preceding paper because of the effect of the publication of a suitably abridged translation of Baron von Weber's infamous The Torture Chambers of Science, the energetic propaganda of the daily press against vivisection, the unreasonable activity of the Society for the Protection of Animals in Denmark, and the passionate opposition of two provincial physicians who represented "the good old medicine." The effect of von Weber's pamphlet of 75 pages with its grotesque illustrations was widespread and lasted for a number of years; there were many editions and it appeared in seven or more different languages.

(84) 1879. De naturvidenskabelige og de lægevidenskabelige Anstalters Udvikling i den nyere og nyeste Tid i Udlandet og her Hjemme [Progress of institutions for natural and medical sciences in recent times abroad and at home]. Tidsskr. f. pop. Fremstil. af Naturv., **26**, 81–109 and 161–192. Virchow-Hirsch, **1**, 369, 1879.

(85) 1879. Nye Meddelelser om de naturvidenskabelige og lægevidenskabelige Anstalters Udvikling i den nyeste Tid i Udlandet [Further Particulars on the Recent Progress of Foreign Institutions for Natural and Medical Sciences]. 33 pp., 8vo, Copenhagen (H. Hagerup). Virchow-Hirsch, **1**, 369, 1879. Ugesk. f. Læger, 3R., **28**, 403, 1879.

(86) 1879. [With C. Reisz and F. Trier.] Nordiskt medicinskt Arkiv og dets danske Læsere; et par Ord til Overvejelse [Some thoughts on the Nordiskt medicinskt Arkiv (of Stockholm) and its Danish readers]. Ugesk. f. Læger, 3R., **27**, 331–337.

(87) 1879. Vort medicinske Fakultets Oprindelse og Barndom. Et Bidrag til Kundskab om Lægevidenskabens og Naturvidenskabernes Udvikling i Danmark [Origin and Infancy of our Medical Faculty. A Contribution to the Knowledge of the Development of Medical and Natural Sciences in Denmark]. 103 pp., 8vo, Copenhagen (Gyldendal). Commemorative paper on the occasion of the 400th anniversary of the founding of the university, June, 1879. Virchow-Hirsch, **1**, 378, 1879.

(88) 1880. Universitetets physiologiske Anstalt. Beretning om dens Tilbliven, Indretning, økonomiske Tilstand m.m., meddelt i September 1874 [The Physiological Institute of the University. Report on the Genesis, Organization, Economic Status, etc., Communicated September, 1874]. 23 pp., 4to, Copenhagen (n. pub., printed by J. H. Schultz).

(89) 1880. Beretning om de Forandringer, som ere foregaaede med det medi-

cinske Undervisnings- og Examensvæsen i Danmark siden det sidste nordiske Lægemøde i Gøteborg i 1876 [Report on the changes in medical instruction and examination in Denmark since the last Scandinavian Medical Congress in Gothenburg in 1876]. Nord. med. Ark., **12** (10), 1–10. Virchow-Hirsch, **1**, 405, 1880.

(90) 1880. Bidrag til Kundskab om vort medicinske Fakultets Historie med Hensyn til dets Betydning for Naturvidenskabernes og Lægevidenskabens Udvikling i Danmark fra Frederik den 3dies Tronbestigelse indtil Frederik den 5tes Død (1648–1766) [Contribution to the History of our Medical Faculty with Regard to its Significance for the Development of Natural and Medical Sciences in Denmark from the Accession of Frederick III to the Death of Frederick V, 1648–1766]. 105 pp., 94 refs., 4to, Copenhagen (n. pub., printed by J. H. Schultz). From the program of the annual celebration of the University of Copenhagen in memory of the ecclesiastical reformation. Bibliot. f. Læger, 6R., **11**, 160, 1881.

(91) 1880. Om de væsentligste Hindringer for Naturvidenskabernes og Lægevidenskabens Reformation i Fortid og Nutid [On the Principal Obstacles of the Past and Present to the Reformation of the Natural and Medical Sciences]. 16 pp., 8vo, Copenhagen (H. Hagerup). An address delivered at the reformation celebration of the university, November 18, 1880. Ugesk. f. Læger, 4R., **2**, 440, 1880. Bibliot. f. Læger, 6R., **11**, 160, 1881.

(92) 1881. [With C. Christiansen. Expression of opinion on Christian Bohr's paper on the height of tetanic contraction.] Overs. o.d.k. danske Vidensk. Selsk. Forh., 52–53 (first pagination).

(93) 1881. Om Valg af en organiserende Bestyrelse for den næste internationale Lægekongres, som i 1884 skal afholdes i Kjøbenhavn [On the election of a committee on organization for the next International Medical Congress to be held in Copenhagen in 1884]. Ugesk. f. Læger, 4R., **4**, 417–423.

(94) 1881. [Editor of] Anatomiske Undersøgelser over Ørets Labyrinth [Anatomical Researches on the Labyrinth of the Ear], by I. Ibsen. [4] + 56 + xiv pp. + iii (i.e., 6) plates, 4to, Copenhagen (H. Hagerup). Completed by Ibsen in 1846 and issued by P. with the support of the Carlsberg Fund.

(95) 1882. Et Tilfælde af formentlig Superføtation [A case resembling superfetation]. Nord. med. Ark., **14** (14), 1–7. Compare, San Francisco West. Lancet, **8**, 54–57, 74, 1879–1880, and Førhandlingar vid de Skandinaviska Naturforskarnes 12te Møte i Stockholm, 1880; 8vo, Stockholm (n. pub., printed by P. A. Norstedt &

Sons), 1883; Section of Anatomy and Physiology, 568. Virchow-Hirsch, **2**, 544, 1882.

(96) 1882. Et lille Bidrag til Kundskab om Forholdet imellem Tidspunkterne for Ægløsning, Samleje og Befrugtning [A short contribution on the relation of the time of ovulation, of copulation and of impregnation]. Nord. med. Ark., **14** (29), 1–3. Also in, St. Louis Cour. Med., **9**, 446–447, 1883. Virchow-Hirsch, **2**, 539, 1882. Schmidt, **197**, 148, 1883.

(97) 1883. Abbés Refraktometre. Førhandlingar vid de Skandinaviska Naturforskarnes 12te Møte i Stockholm, 1880; 8vo, Stockholm (n. pub., printed by P. A. Norstedt & Sons); Section of Anatomy and Physiology, 557–559. An exhibition. P. was Chairman of this Section.

(98) 1883. Om Naturvidenskabernes og Lægevidenskabens indbyrdes Forhold med særligt Hensyn til Naturforskermøderne [The reciprocal relation of the natural and medical sciences with especial regard to the meetings of naturalists]. Ibid.; General Meetings, 121–130.

(99) 1883. Bemærkninger om Mælks Næringsværdi [Observations on the nutritive value of milk]. Tidsskr. f. Landøkonomi, 5R., **2**, 783–791. Also in, Hyg. Medd., 3R., **2**, 232–242, 1884.

(100) 1884. Om Undersøgelser angaaende sunde og syge Menneskers Kostrationer, særlig i Hospitaler, Stifelser og Fængsler i forskellige Lande [Researches respecting food rations of persons in health and disease, especially in hospitals, asylums and prisons of different countries]. Nord. med. Ark., **16** (24), 1–18. Also in, Congrès Périodique International des Sciences Médicales, 8me Session, Copenhague, 1884; Compte-Rendu, C. Lange; 8vo, Copenhagen (F. Hegel & Son); v. 1, General Section, 81–91. Med. Rec., **26**, 203, 1884. Brit. M. J., **2**, 410, 1884.

(101) 1884. [Biographies of twenty physicians.] U. B. Aaskow, P. C. Abildgaard, H. Arnisæus, J. Bang, F. L. Bang, O. S. Bang, C. Bartholinus (Senior), T. Bartholinus, E. Bartholinus, C. Bartholinus (Junior), H. C. B. Bendz, J. C. Bendz, C. J. Berger, J. J. v. Berger, O. Borch, J. Bording, J. D. Brandis, J. de Buchwald, B. J. de Buchwald, and T. Buntzen. In, A. Hirsch and A. Wernich, Biographisches Lexikon der hervorragenden Aerzte aller Zeiten und Völker; v. 1, 8vo, Vienna and Leipzig (Urban & Schwarzenberg); 2ed. by F. Hübotter, Berlin and Vienna (Urban & Schwarzenberg), 1929.

(102) 1884. [Short prefatory note, pp. 3–4, to] Hvorledes skaffes God daglig Kost for den billigste Pris? [How Procure Good Daily Food at the Cheapest Price?] By S. Torup and J. C. D. Holmfeld. 47 pp., 12mo, Copenhagen (H. Hagerup).

(103) 1885. Beklædning af udenfor Bughulen befæstede og fastvoksede Tarmslyngers Peritonealflade med Epidermis, ved Forsøg paa at anlægge Tarmfistler hos Hunde [Spontaneous replacement of the peritoneal epithelium of the intestine by the epidermis of the skin in parts of the small intestine secured and grown fast outside of the abdomen, observed while experimenting on dogs with the object of establishing intestinal fistulas in them]. Nord. med. Ark., **17** (6), 1–5.

(104) 1885. [With L. Lorenz and C. Christiansen. Expression of opinion on A. Lehmann's essay on the relationship of the visual angle to light and color in direct vision.] Overs. o.d.k. danske Vidensk. Selsk. Forh., 31 (first pagination).

(105) 1885. [With C. Barfoed and S. M. Jørgensen. Expression of opinion on J. Sebelien's essay on the albumen of milk.] Ibid., 39–40 (first pagination).

(106) 1886. [Address of welcome by the President of the 8th International Medical Congress, August 10, 1884.] Congrès Périodique International des Sciences Médicales, 8me Session, Copenhague, 1884; Compte-Rendu, C. Lange; 8vo, Copenhagen (F. Hegel & Son); v. 1, General Section, 1–4. For some interesting details concerning P., Pasteur and the Congress, see René Vallery-Radot, The Life of Pasteur (trans. by Mrs. R. L. Devonshire), 8vo, New York (Doubleday, Page & Co.), 1926; pp. 398–402.

(107) 1886. Discours à l'inauguration du huitième "Congrès international des sciences médicales." Copenhagen, August 10, 1884. [Presidential address on the history of international medical congresses.] Ibid., v. 1, General Section, 10–17. Brit. M. J., **2**, 561, 1884. M. Times & Gaz., **2**, 277, 1884.

(108) 1886. [Opening address before the Section of Physiology, 8th International Medical Congress, Copenhagen, August 11, 1884.] Ibid., v. 1, Section of Physiology, 1–2.

(109) 1886. Beobachtungen bei Vorbereitungen zur Anlegung von Dünndarmfisteln für physiologischen Zwecke. Ibid., 60–67.

(110) [?] Slagtning [Slaughtering]. Pp. 255–261 removed from a Danish encyclopedia (?). Signed *PP*.

B. About P. L. Panum

(111) Gosch, C. C. A.

1870–1878. [Biography, and Bibliography.] Udsigt over Danmarks zoologiske Literatur med en indledende Fremstilling af de videnskabelige Grundsætninger for Naturvidenskabens især Zoologiens Studium [A View of the Zoological Literature of Denmark with an Introductory Presentation of Scientific Principles for the Study of the Natural Sciences, especially Zoology]. 3v.

in 4, 8vo, Copenhagen (O. Schwarz's Successor, E. Jespersen); v. 2, Part 2 (Biography), 160–173; v. 3 (Bibliography, 34 items), 456–464.

(112) HAHN, L.
1884. [Biography.] Dictionnaire Encyclopédique des Sciences Médicales, A. Dechambre and L. Hahn. 8vo, Paris (Masson. Asselin and Co.); 2 ser., v. 20, 411.

(113) ANON.
1885. [Obituary.] Bibliot. f. Læger, 6R., **15**, 521–524.

(114) BOHR, C.
1885–1886. [Obituary.] Biol. Centralbl., **5**, 257–259.

(115) BUNTZEN, J.
1885. [Obituary.] Ugesk. f. Læger, 4R., **11**, 529–533.

(116) D[ELAVAN], D. B.
1885. [Obituary.] New York M. J., **41**, 669–670.

(117) PETERSEN, J.
1885. [Obituary.] Nord. med. Ark., **17** (24), 1–14.

(118) STORCH, O.
1885. [Obituary.] Fortschr. d. Med. (Beilage), **3**, 85–86.

(119) TIGERSTEDT, R.
1885. [Obituary.] Hygiea, **47**, 408–422.

(120) TRIER, F.
1885. Panums sidste Sygdom [Panum's mortal illness]. Hosp.-Tid., 3R., **3**, 1089–1093. [Trans. by H. Mygina.] New York M. J., **42**, 619–620, 1885.

(121) WELCH, W. H.
1888. [Refers to the isolation of bacteria-free chemical substances from putrid materials.] Cartwright Lectures: The General Pathology of Fever. Lecture 3: The Etiology of Fever. Boston M. & S. J., **118**, 417. Also in, Med. News, **52**, 544, 1888.

(122) ANON.
1901. [Biography with portrait.] Biographisches Lexikon hervorragenden Aerzte des neunzehnten Jahrhunderts, J. Pagel. 8vo, Berlin and Vienna (Urban & Schwarzenberg); 1256–1258.

(123) VON JÜRGENSEN, T.
1902. [Reference to measles epidemic.] Measles, in Nothnagel's Encyclopedia of Practical Medicine. 8vo, Philadelphia and London (W. B. Saunders & Co.); [v. 3], 227–230.

(124) CARØE, K.
1904. [Biography.] Den Danske Lægestand, Supplement; 81.

(125) SALMONSEN, C. J.
1917. [Biographical essays on Pasteur, Virchow, A. Hannover, Panum,

Weigert and R. Pedersen.] Smaa-Arbejder. 8vo, Copenhagen.

(126) J[OHNSSON], J. W. S.
1920. Peter Ludwig Panum. Ugesk. f. Læger, **82**, 1581–1582.

(127) KRAFT, L.
1920. Peter Ludwig Panum [with portrait]. Hosp.-Tid., **63**, 838–846.

(128) FABER, K.
1923. [Reference to work on lung measurement of 1868.] Nosography in Modern Internal Medicine. 8vo, New York (P. B. Hoeber); 133. 2ed., 1930.

(129) MADSEN, T.
1927. Peter Ludwig Panum, born 19th December 1820—died 2nd May 1885 [with portrait]. Boston M. & S. J., **196**, 1048–1049.

(130) ROSENAU, M. J.
1927. [Reference to measles epidemic.] Preventive Medicine and Hygiene. 5ed., 8vo, New York and London (D. Appleton and Co.); 209.

(131) [DAHL, S.]
1929. [Bibliography, and Biography.] Danish Theses for the Doctorate, and Commemorative Publications of the University of Copenhagen, 1836–1926, a Bio-Bibliography edited by the University Library. 8vo, Copenhagen (Levin & Munksgaard) and London (H. Milford); 56, 72, 83, 84, 299.

(132) LITTLE, J. L.
1931. Peter Ludwig Panum, 1820–1885, a pioneer in the epidemiology of measles [with portrait and small map]. Canad. Pub. Health J., **22**, 509–516.

(133) STALLYBRASS, C. O.
1931. [Reference to bacteriological work of 1874, and measles epidemic.] The Principles of Epidemiology and the Process of Infection. 8vo, London (G. Routledge & Son); 141, 197.

(134) PETERSEN.
1932. [Biography.] Biographisches Lexikon der hervorragenden Aerzte aller Zeiten und Völker, E. Gurlt, A. Wernich, A. Hirsch, W. Haberling, H. Vierordt and F. Hübotter. 2ed., v. 4, 8vo, Berlin and Vienna (Urban & Schwarzenberg); 492–494.

(135) MEISEN, V.
1932. [Biography.] Tilbageblik paa Medicinsk Selskabs 60 Aars Fødselsdag. [The Medical Society in retrospect on its 60th birthday]. Hosp.-Tid., **43**, 1262–1265.

(136) HEDRICH, A. W.
1933. [Reference to measles epidemic.] Monthly estimates of the child population "susceptible" to measles 1900–1931, Baltimore, Md. Am. J. Hyg., **17**, 615, 616.

ACTIVITIES OF THE INSTITUTE OF THE HISTORY OF MEDICINE

On April 7th, was celebrated the 50th anniversary of Dr. William H. Welch's appointment to the Johns Hopkins University. For half a century, he has served this institution as Professor of Pathology, Director of the School of Hygiene and Public Health, and Professor of the History of Medicine. The University and the schools with which he was connected passed resolutions on this occasion. The William H. Welch Medical Library, and the Institute of the History of Medicine, Dr. Welch's latest creations, were among the many who extended their wishes. On April 8th, Dr. Welch celebrated his 84th birthday.

MEETINGS

On April 12th, there was a regular meeting of the Johns Hopkins Medical History Club. Major Edgar Erskine Hume spoke on Spanish American Colonial Medicine, Dr. A. A. Moll on Physicians in Public Life in Latin America, both papers being published in this issue.

On April 18th, a group of students of the Maryland State Normal School in Towson, Maryland, spent an evening at the Institute. They were addressed by Dr. Sigerist and Dr. Oliver, and inspected the Institute and the library.

GIFTS

Several valuable books were presented to the Institute, among which are:

Oratio Jacobi Milichii . . . . de pulmone, etc. Recitata cum decerneretur gradus doctorum . . . . Paulo Lutheri . . . . Martini Lutheri filio . . . . Vitebergae, 1557. Given by Dr. Harry Friedenwald.

William Burke: An account of the European Settlements in America . . . . London, 1760. Given by Dr. William G. MacCallum.

Professor Arturo Castiglioni presented the Institute with a splendid collection of 17th and 18th century pharmacy jars (fig. 1), a highly welcome gift. Besides the Henry Barton Jacobs Collection, and the

collection of Singhalese manuscripts and objects presented by Dr. Casey Wood, our Institute is still very poor as far as medical objects are concerned. Although it cannot be our aim to establish a large museum, yet a small collection would be extremely valuable for research as well as for teaching purposes. Gifts of that kind, therefore, will always be highly appreciated.

FIG. 1. PHARMACY JARS (17TH AND 18TH CENTURY) PRESENTED TO THE INSTITUTE BY PROF. ARTURO CASTIGLIONI

Dr. Henry E. Sigerist sailed for Europe on May 30th, and will be back in the beginning of October. He will spend most of the summer investigating early mediaeval manuscripts in the libraries of Italy, France, Belgium and Holland. While abroad, his permanent address will be: 182, St. Albanring, Basel, Switzerland.

H. E. S.

CORRIGENDA

In Dr. Henry E. Sigerist's *Syllabus for a Course in the History of Medicine* (Bulletin of the Institute of the History of Medicine, vol. II, 1934, pp. 123–139), a few printing errors have been overlooked which necessitate correction.

p. 126. The papyri Edwin Smith, Ebers, Brugsch Maior, and Hearst, have been placed too high up in the column. They were written in the 16th Century B. C. or soon after.

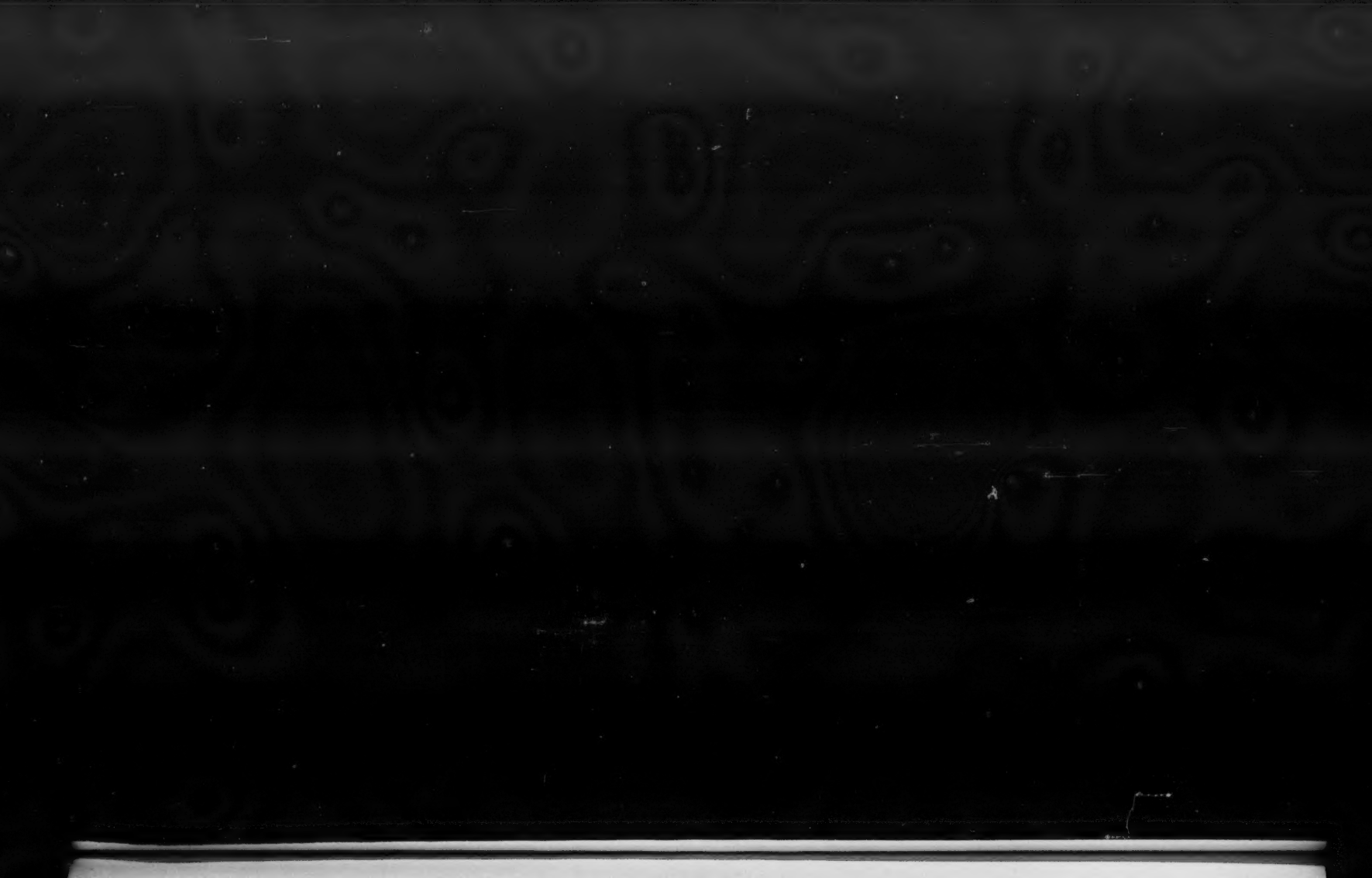
p. 129. Foundation of Alexandria, 332 B. C.

p. 131. Black Death, 1348–49.

J. B. Bury, A History of the Later Roman Empire, 2 vols., London, 1889, is out of print. There is another book by the same author which can be recommended instead: A History of the Later Roman Empire from the Death of Theodosius I to the Death of Justinian. London, Macmillan, 1923.

p. 135. Morgagni, 1682–1771.

p. 136. 1880

Leprosy—Hansen

p. 137. Public Health Act, 1848.